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University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH FEBRUARY 15, 1980

HC

Food Science & Technology
Information Service
7 MAR 1980
C.F.T.R.I., MYSORE

Dr. L. K. Bhutani, Dr. K. S. Mathur, Dr. Madhavan Kutty and Dr. S. Subramaniam at the time of receiving Dr. B. C. Roy National Award in New Delhi.

CLASSIFIED ADVERTISEMENTS

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Note:— (i) Scheduled Castes and Scheduled Tribes candidates called for interview will be paid travelling allowance as per rules of the Institute.
(ii) The essential qualifications are relaxable at the discretion of the Selecting Authority.

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Advertisement No. 1/80 Dated : 22-1-1980

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T. Narayan Reddy
REGISTRAR

UNIVERSITY
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Editor : ANJNI KUMAR

C.F.T.R.I.,

Research and Education

—Linkage in Universities

Ram Joshi*

The traditional functions of university education have been defined as the discovery of knowledge and its transmission from one generation to the next. Although it has become somewhat fashionable to call these functions into question and also to assign new tasks to the University such as supply of trained manpower or participation in socially relevant work, I believe that our idea of the University should not be subjected to every passing vogue or changing national concerns, and that the fundamental role of the University today remains what it has been in the past. This is to ensure the continuity of culture and the transmission of knowledge on the one hand and their advancement on the other. This has been and remains the central and abiding purpose of the University; everything else, in my view, is peripheral and transitory. The conditions under which universities are called upon to accomplish these purposes have undoubtedly changed considerably but the purposes themselves have remained the same, though adaptation to new circumstances is always necessary if the tasks are to be carried out satisfactorily. This has often necessitated redefining the emphasis to be given to teaching and research in the scheme of higher education.

Ideally, a balance between research and teaching is the hallmark of a good system of university education. It is, in the words of Ludwig von Humboldt, an inescapable characteristic of a University. Undoubtedly, if research and education in the sense of teaching are pursued together, they can generate an atmosphere of learning that is invigorating and gives added point to both. Brought into effective interaction they can produce a harmony which would vitalise the University from top to bottom and enable it to move forward with strength. However, this ideal harmony is not easily achieved and is not likely to be achieved unless universities recognise the counter-pulls and make special effort to balance them.

Among the factors that have disturbed the balance mention must be made of the exploding variety of human knowledge and the unprecedented demographic expansion on University Campuses. Awareness of these disturbing factors has led many to stress teaching as the primary responsibility of a University. Transmission of the existing stock of human knowledge has per force to be given priority, they say, in view of the large and increasing numbers who come to the University. These are young men and women in a hurry. They have a limited purpose in entering

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**Vice-Chancellor, University of Bombay.*

a University and they want to accomplish it within a specified time. In this situation, we are told, teaching acquires priority over research.

It is true that no University can abdicate this responsibility of teaching and still be a University in the normally-understood sense of the term. There are to be sure, bodies of learned people (mainly in the institutes) who do only research. In India and abroad research is no more the exclusive responsibility of universities. It has now become a shared purpose with many other public and private research organizations and this has led to a series of consequences for the Universities some of which will be discussed later in this article. But the fact is that such research bodies or institutes can exist only because the Universities are there to perform their normal tasks. Whether these are performed well or not is another matter. It will be a sad day when a non-research scholar, possessing wide learning and a real intellectual outlook, is ranked lower in prestige than a second rate researcher. Unfortunately it is already happening here in India and abroad. To be the inheritor of the accumulated culture and to be an effective communicator of that culture to the younger generation is a difficult and responsible enough task. Any devaluation of a person who performs these tasks effectively will be to the lasting detriment of the University as it is bound to affect the function of knowledge transmission. In other words there is a strong case for recognising the worth of a teacher as teacher, that is, as one who only transmits knowledge without contributing to its advancement.

It is not fair to say that there is no reliable way of assessing the worth of a teacher except his hearsay reputation. It is true that the area of his action is the classroom and that his words are ephemeral. But the spoken testimony of hundreds of grateful students and the objective yet appreciative judgement of qualified peers are sufficiently trustworthy and can be used in assessing the real worth of a teacher. The classroom is a critical arena for academic action. To place a reputation earned *outside* the classroom (seminars, conferences, publications) *above* the reputation *inside* the classroom is to reverse the order of academic values. The latter is at the core of the University function, the former is on the circumference. The insulation of the classroom unfortunately contributes in a large measure to this tendency. Students' evaluation of teachers could partially provide a corrective. Peer evaluation is also useful upto a point. But the real need is for the whole system to devise a method or methods for judging and rewarding outstanding teachers.

Having said this in defence of the claims of teaching for primacy in university education, it should be added at once that it would be no less a serious mistake to devalue good research. Knowledge is a constantly growing and expanding thing, requiring revision and reassessment of the inherited stock. In this valuable task only the able researcher can help. The University's reward system should be so constituted as to be flexible enough to encourage a good teacher to become a better teacher and a good researcher to become a better researcher. It will simply not do to emphasise one and neglect th other. It must be frankly admitted that it is no given to everyone engaged in University educatio to be *both* a good teacher and a good researche *simultaneously*. Those who can achieve the twi objectives will become the most prestigious member of the academia and will serve as objects of emulation. Afterall, education works best when it can dra upon men and women who are themselves explorers The spirit of inquiry in them, and their love an thirst for new knowledge will enable them to produc an enduring impact on their students by awakenin and stimulating in them the delight in the use o the mind, the pleasure of following ideas and o discovering where they lead and finally the experienc of intellectual thrill and excitement that the romanc of ideas provides. Research is thus vitally importan to a University. It provides the University with its driving force and its creative stimulus and protects education from the dangers of sclerosis by compelling teachers to adopt and renew their teaching. Just as there can be no university without teaching there can be no valid, uptodate and dynamic teaching without research. Without it teaching becomes listless and an uninspiring, sterile exercise in passive transfer of information which students can obtain from other sources and perhaps in more interesting ways. One can perhaps attempt to reconcile the relative claims of teaching and research in the context of the contemporary knowledge explosion and campus enrolments by saying that good transmission will become progressively more critical quantitatively and prepare the groundwork for research by the few who are potentially capable of doing it.

Research always raises the question—what research? Research on problems that are already obvious or research on problems that are remote in time and the criticality of which is seen only by a few? 'Relevant research' is a much-used and much-abused term these days. Clearly 'relevance' does not have any meaning except in relation to the reference points and unless those are specifically stated 'relevant research' is a term which conveys nothing. Relevant to what? or, to whom? for what time-span? And who will decide what is relevant and what is not? Political rulers? Academic masters? or, those individuals, institutions, corporations or military establishments who finance most of research today? Since human beings have at best only a dim idea of what the future will bring, no definite and satisfactory answer can be given to any of these questions. Except in periods of crisis like wars or epidemics when the short term choices are clear-cut and decisive, one has no way of being sure that today's choices will necessarily be valid tomorrow. Under these circumstances the criterion of 'relevance' if applied rigidly, would result in wastage of resources and misdirection of research.

Speaking about the current position of research in Indian Universities, one needs to refer to two points. Reference has already been made to the fact that research is no more the exclusive responsibility of universities. Many non-campus research efforts are on

(*Continued on page 89*)

Management of Research in Universities

V. K. Sukumaran Nayar*

Universities have a major role to play in research. However, the University system with its administrative bodies chosen by election or rotation is not adequately equipped for performing managerial tasks. University administrators like Vice-Chancellors, Pro-Vice-Chancellors, Deans, Directors of Schools and Heads of Departments are very often chosen not because of their contributions to management, but to teaching or research or expert knowledge of particular disciplines. In terms of numbers Universities are dominated by large student bodies of undergraduates and students working for professional degrees. One of the main functions of the modern university is to certify people as eligible for various types of jobs such as teachers, engineers, doctors, nurses, accountants etc. In addition to this vast numbers of students are given general education which may not qualify them for any profession but give them an advantage over persons with lesser education. It is amazing that a University, structured as it is today, is able to make a contribution to research and the advancement of knowledge.

The management of research is a function of the University system as a whole. Most University administrators and all University authorities have to devote a part of their time for the management of research. The amount of attention that research gets in a University depends upon the emphasis given to research by its administrators and academic bodies. Very often, there is no co-ordination in University research. Individual teachers are left free to pursue the kind of research in which they are interested. Sometimes, a department or school may set up goals in research and may draw up plans. However, research is still being done at the initiative of the individual scholar. There are few limitations on the scholar in selecting his topic of research and carrying on his research work. The only limitation is that of the availability of funds.

Before discussing how to administer research it is necessary to find out who does the research in Universities. In many Universities in the Commonwealth some research is done at the Master's level. The student is expected to write term papers or a short monograph. However, the contribution that the student makes to the advancement of knowledge is minimal as he gets only a training in the application of research methods during the period of his Master's course. However, it is at the level of the Ph.D. that the student is introduced to real research. The Ph.D. is very often a passport to a job in University teaching. If the degree holder does not find a job in an institution with a climate for research he may end his career in research with the acquisition of the doctoral degree. Those who are able to get job in research schools or institutions are, however, encouraged to pursue their research. The number of Ph.Ds awarded by Universities in the Commonwealth vary considerably. A University like London award more than a thousand doctorates, Cambridge about 462. The University of British Columbia awarded 125 Ph.Ds and the University of Delhi 175 the Australian National University 93 and the University of Kerala 52. I have excluded from this medical degrees like the M.D.

The research output of a University is based on the scholarly work published by its teachers. A substantial part of the research work of a University is carried on by its teachers. Many teachers are able to get funds from agencies outside the University for their own research. Funds are attracted to the University for research due to the reputation and initiative of the teachers. In some cases the reputation of a research school or department may result in attracting research funds.

Universities are traditionally equipped to deal with the managerial problems arising out of the function of teaching. Classroom space has to be provided and time-tables have to be framed so that a number of different courses could be taught at the same time. It is possible to fix the number of lectures or seminars that a teacher should engage as well as to determine in a broad way the content of the courses that he is expected to teach. However, it is not possible to fix a schedule like this for research. The time that a teacher wishes to devote for research has to be left to be determined by him. What is possible is to provide him office space, laboratory and library facilities. Today, most research requires associates of assistants who are exclusively employed for the purpose.

One of the most important managerial tasks of any University system is the maintenance of an atmosphere conducive to scholarly enquiry. Administration almost everywhere works on the hierarchic principle. However, research requires a climate of co-operation and a respect for the dignity of the researcher. Concentration of too much power in the hands of heads of departments, Directors of Schools and Deans very often results in producing conflicts. One of the remedies suggested is rotation of some of the administrative positions. However, rotation may deprive many departments and schools of the leadership that they should have in the formative years.

The task of the management is to motivate the individual researcher, whether he is a student, or teacher and provide him with the facilities as well as the psychological atmosphere for scholarly enquiry. The University teacher very often is able to get the recognition that he hopes for. The mere fact of publication of his work in a reputed journal or acceptance in a leading professional conference is sufficient recognition. However, he also craves for recognition by the University administration. In fact he would like to be treated with the consideration due to a scholar. Administrative systems, in their continuous effort to streamline procedures neglect the human element. The researcher wants to be involved in the decision making process. To enable this there must be decentralisation at the administrative level in the University. The major decisions must be taken by committees in which the researcher is also involved.

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*Vice-Chancellor, University of Kerala.

The management of research at the top level requires co-ordination between agencies concerned with the providing of research and industrial concerns interested in co-operating with the University. In most developing countries industry is not sufficiently motivated in promoting research in the Universities. There is also the problem of the multiplicity of government agencies interested in research and willing to subsidise University research. For example in a state like Kerala a lot of money is spent on the development of fisheries. However, government agencies do not take cognisance of the fact that the University has one of the best departments of Aquatic Biology and Fisheries in the University. There is a great deal of room for collaboration with governmental agencies and the Universities.

Another aspect of management is planning. Universities may have to think ahead for the next ten or twenty years in order to shape their priorities in research. This requires the co-operation of all teachers of the University who are engaged in research. In fact each discipline will have to think in terms of the contribution that it can make in the future. There are several problems involved in the planning of research. One is in the highly stratified functioning of the University. Each teacher thinks in terms of his speciality. The increasing stress on specialisation has practically danuded most Universities of generalists. It is easy for administrators or management specialists to think in terms of goals or priorities. It is difficult to persuade specialists to think in larger terms. That is one of the tasks that face University management.

India can be taken as a case study in the management or non-management of research. Though a developing country India ranks third in the list of countries so far as the size of the scientific and technical manpower is concerned. There are over a hundred institutions with University status. The oldest three Universities were started one hundred and twenty two years ago. Apart from the Universities there are the national laboratories and other institutions under various Ministries, federal and state, which are engaged in research. Apparently there is a lot of interest in research, but very little co-ordination.

It was only after the first world war that Universities began to interest themselves in research. University departments of research were created in most universities. This meant that research was largely divorced from teaching except at the post-graduate level. As the bulk of teaching is done in colleges affiliated to Universities most teachers are not involved in research, though some colleges are notable exceptions. Recently, through a massive faculty improvement programme, an effort is being made to induce the teachers to do research for short periods at university departments and other research schools.

Most Indian universities have a more or less uniform system of governance with Vice-Chancellors, and Pro-Vice-Chancellors appointed for specified periods, Syndicates or Executive Councils, Academic Councils and Senates which compose of a large elected element. In many affiliating universities teachers from the colleges who are not involved in research get elected to those bodies in large-numbers. As university bodies operate under a heavy agenda research may often get a low priority in the discussions that take place. Some Universities have established Research Committees or Research Councils or Councils of Post-Graduate Studies to look after research. Recently, under the direction of the University Grants Commission, Planning Boards have been set up in most Universities with representation for professors involved in research. However, the setting up of such bodies does not mean that there is management of research.

The major tasks of the management of research in Indian Universities are several. First, there is the need to give the required priority for research in the decision making processes of the University. Second, the public has to be educated regarding the importance of research in Universities. Third, the large body of teachers who work in colleges and professional schools have to be trained to take some interest in research. Fourth, the University Departments, where the bulk of the research work is done, have to be strengthened considerably and opportunities of advancement given to the younger teachers. Fifth, Universities have to establish a liaison with industry both in the public, mixed and private sector and induce industry to support university research. Sixth, the research done at the university level has to be linked to the development plans of the state.

Apart from the problems facing Universities in countries like India there are certain larger issues that arise out of any discussion on management of research in universities. The first-question is whether it is desirable to manage research in a University ? If by management we mean that research in certain areas is to be supported and in other areas to be discouraged because of 'usefulness' or 'relevance' or some other standards it is better that a university does not think in terms of managing research. The freedom of the student or the teacher to contribute to knowledge should in no way be restricted. Research on Shakespeare or Kalidasa or some other dramatist may not contribute in any significant way to economic development, However, such research has to receive priority from the universities. Teachers should be left free to decide whether they would like to do research in pure or applied science. If by management of research we mean a better utilisation of existing facilities, we should welcome it. The management of research should be so designed as to encourage scholars to think in terms of the world of the future.

□

University Research and National Development

Rais Ahmed*

University Research and National Development is a rather ambitious topic to discuss in one afternoon. In India this has been a subject of considerable concern since our universities are in a position to make a substantial contribution to the quantum and quality of national development which seem to be in urgent need of such inputs. Only in September 1978 the University Grants Commission and the Indo-US Sub-commission on Education and culture organized a major seminar on this subject at the University of Kashmir in Srinagar and a book representing the papers and the suggestions of the seminar is round the corner.

A few selectes aspects of the large question of university research in relation to national development may be mentioned.

1. Firstly, it has to be accepted that university system has a *tremendous* as well as a *special* potential for researches contributing to national development. In India the largest manpower engaged in research exists in the universities ; its contributions although overwhelmingly in pure or theoretical studies, are far in excess of that of other institution ; by virtue of access to young students and research scholars who work in a time-bound frame the universities not only work economically but also are and could be a font of innovative ideas. A special feature of research oriented to national development is that cooperation of a variety of disciplines is required to solve problems, and the universities are endowed with faculties and departments dealing with a multitude of subjects. Adaptation of technologies, assessment of technologies and transfer of technologies particularly to small producers in rural areas are activities which the universities can well handle. Thus the universities have a definite advantage over other institutions in undertaking research applied to problems and national and regional development.
2. Secondly, it is a patent fact that the universities are starved of funds, which in view of the previous paragraph can be described as something which is detrimental to national development. The infrastructure support per research worker is far less than in other institutions whether seen in terms of funds or technical staff or equipment and other facilities. In some countries, and India is one of them, it was decided long ago as a matter of policy to fund for applied/industrial/technological/agricultural research to solve problems of economic significance in institutions outside the university system. This not only led to slowness of response to problems but also isolated the universities further from practical concerns. In recent times one finds the situation worsening because funds for the universities have begun to be slashed under an argument that either the universities function in ivory towers, or that higher education is less important in a poor country than primary or secondary education. The crucial role of universities both in education (preparing of monpower) and research (translating knowledge into economic and social benefits) is then ignored. The universities must resist this tendency, and be determined to get involved in the solution of practical problems facing the country in diverse fields of activity.
3. In order to convert the potential of the universities into reality, it is imperative that on the one hand the policy makers should deliberately change the policy of merely suffering the universities, and on the other hand university people should set their own house in order so as to shed the hallmarks of isolation, and formalism too far gone. Tremendous inputs are required to upgrade facilities not in just a few universities but generally in most of them. Funds instead of being curtailed need to be enhanced. The universities must renovate old fashioned rules, procedures, a whole culture to allow cooperative use of facilities, greater freedom to investigators, and consultation regarding problems of research across disciplines, across faculties, across the universities and other institutions. Educational content, and more importantly, educational methodology has to change so that students become more self-reliant and their creative abilities have a chance to show up.
4. Lastly, it is to emphasize that involvement of university research in national development will not come about by merely wishing for it. It is a question now of *organizing* and *institutionalizing* it.

The process of national development has three interdependent aspects but in traditional societies like ours each of these aspects is treated as self-contained and is organized as such. One is, of course, the enhancement and diversification of agricultural and industrial production, and ensuring fair and equitable distribution of goods and services so that there is food and water, clothing and shelter, health and recreation for all. The other, which is necessary to achieve the first, is the employment of traditional as well as new knowledge, and exploring to discover specific solutions and evaluating them. The third, essential for both the preceding aspects, is preparation of various levels of manpower. In some documents these interdependent sectors are briefly referred to as "Production" (P), "Research and Development" (R), and "Education" (E), and represented as a linked triangle.

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*Vice-Chancellor, Kashmir University.

P (Managed by Govt and private industry)

(Managed in centres of Research in Technology/ Lab) **R**

E (Research Training and Education)

A positive hindrance to full utilization of our resources, and expeditious development of our economy is that there is hardly any interaction between, P, R and E since each is organized in a self contained subsystem : Production is mostly the concern of Govt : Research that of the special agencies or laboratories, and Education that of the universities. In fact, sometimes the presonnel in each tries to jealously guard its sector from incursions across the border from others. In the bargain all the three suffer—production without high level inputs of most modern knowledge, unbased on research; research on unreal or distant problems unconnected with our own practical experience ; education which tries to stand aloof from the life and needs of the common people, all become stunded or decadant.

One of the keys to our progress, therefore, lies in building bridges between P, R and E and institutionalizing interaction. Research and Education have some give and take, but the relationship between Production and Education requires to be much developed through reform of curricula and channels of non-formal and continuing education—which are receiving some attention. Our most important task is to think of ways and means of informing research workers about problems of rural development, environmental pollution, growth of small scale industry and handicrafts, and the vast and varied problems of health, horticulture, agriculture, sericulture and fisheries—so that research is directed towards the solution of regional developmental problems.

One model for institutionalizing the interaction which may be put forward is for a university to identify a region of the country as a base for its activities, and then to set up a general body of scientists, technologists, administrators, economists and sociologists etc drawn from university department, agency laboratories or institutions, and Government departments such as agriculture, industries, rural development etc. This general body consisting of about 100 persons could be a forum to discuss both problems of development and problems of coordination of work and sharing of facilities amongst the institutions involved in the network. General policies and perspectives could be worked out by such a forum which may be given a name such as a Council of Regional Development. The general policies could then serve as a guide for a large number of working groups which should be set up for specific areas of work and should consist only of experts from the region and advisers from outside the region. For example, if growing of fruit is an important economic activity of the region, a Working Group of about half a dozen specialists on horticulture could be set up which examine in depth the nature of problems which limit the growing of fruit, or effect its health and quality, or effect storage packing and trade in general. Research programmes which may be identified by the Working Groups could then be completed and refined by a coordination group consisting of conveners of all the Working Groups. Lastly the cooperating institutions could be assisted to have between them the research facilities required for the work indicated by the Working Groups. If need by a special centre or laboratory could also be created to share in taking up research on the identified problems. The results of research could be monitored by the Working Groups and periodically reported to the General Body or the Council for Regional Development.

This three tier arrangement: General Body (policy making and creating opinion and conditions in favour of coordination), Working Groups (identifying specific problems for research) and Centre or Laboratories (for actually undertaking the research) —is probably what we need in our countries to systematically take up the challenge of research for national development. The regional basis is essential for concretising the search of problems and for testing the outcomes—but it does not mean that Working Groups may not be set up for broader and national problems, or that the pure research ideas thrown up in the process, or otherwise, may not be tackled.

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The Journal is mailed on 1st & 15th of every month.

State Support for Science Research in University

G. P. Singh*

At present Research in general and that in Science in particular is not getting enough support from the State Government. The Bihar which is so rich in natural resources (minerals, agricultural, water fisheries, etc.), ought to have its own Research funding organisation for co-ordinating research in various universities of Bihar for better utilization of its natural resources.

The phrase "applied research" is sometimes overemphasised by the planners of State Walfare. As a result not enough money and facilities are available in "Basic research" which is being carried out mainly in the Universities. Support of Basic research is of paramount importance not only for the progress of science but also for providing research training to the younger Scientists. It should not be lost sight of that applied researches are based on the findings of the fundamental research.

Therefore, it is proposed that the State owned research organisations should take up mainly applied research, leaving the Basic research for the Universities.

There should be a suitable co-ordinate agencies like the State Council of Science Research (SCSR) under the Ministry of Science and Technology/Education. The purpose of the proposed SCSR would be :

(i) to identify the various fields/branches in which research is desirable, while doing this the welfare of the state, its requirements, resources, expertise and equipments must be taken into consideration ;

(ii) to arrange funds and financial assistance for carrying on research, sanction of R & D relevant research projects ;

(iii) to encourage research for improvement and useful exploitation of regional resources, viz., plants, minerals, live stocks (including man), fisheries ;

(iv) to co-ordinate training, motivation and preparation of cadre of young scientists to have a suitable infrastructure for carrying various research activities.

The State's support, however, must not cease with the above mentioned measures. It should in fact try to create and maintain proper environment for conducting research, for example it should try

(a) to curtail administrative bottlenecks ;

(b) to maintain regular and uninterrupted supply of basic requirements like electricity, water etc.

The supports mentioned above are in fact quite basic in nature as we are unable to do any Laboratory work in the universities, because of non-availablity of electricity and water. Long term measures for support could be thought of only when the basic support from the state for science research in Universities is met with. □

Research and Education

(*Continued from page 84*)

and they have as many qualified researchers and research facilities as some of the best universities. In fact, far superior resources are being expended on research outside of universities. High quality, prestigious research has already moved outside the jurisdiction of Indian Universities and it is being conducted in especially created governmental or autonomous institutions. This trend has had a disastrous consequence on the Universities in that it has resulted in the lowering of their standing as institutions of higher learning. It has also turned the flow of talent and money away from Universities causing a further depression of their rank in the educational hierarchy. In developed countries the campus still remains the backbone of their basic national research effort, although many have begun to question just how much money is appropriate to research given other needs and how many institutions should be doing research, the problem of duplication being fairly rampant. In India the deliberate withdrawal of high quality and expensive research from the purview of the Universities has harmed them. The situation needs to be remedied without delay since it lies at the root of the current legitimacy crisis of Indian Universities.

The second point that needs to be made is that much of the current Indian research, whether in the social or the natural sciences or in the technologies, is highly wasteful in that it is a second-rate and sometimes a third-rate imitation of discoveries already made elsewhere in the world, or a blind application of theories and models developed elsewhere in wholly different contexts. A thorough scrutiny of the present state of research is called for and a redefinition of priorities needed.

Although the exigencies of rapid national development necessitated the setting up of specialised research institutes, they must supplement and not supplant the Universities. They must not be allowed to fragment the university system by ignoring the need for a truly cooperative plan for research. In developing countries like India the need for such a cooperative plan is self-evident given the scarcity of human and other resources. Forging of institutional linkages among all institutions engaged in research activity alone will enable the optimum utilisation of those scarce resources. □

**Vice-Chancellor, Bhagalpur University.*

CAMPUS NEWS

AIIMS workshop on community opthalmology

Dr. L.P. Aggarwal, Director, All India Institute of Medical Sciences, New Delhi, while welcoming the delegates who attended the workshop on community ophthalmology held at the Medical Institute from 10 to 12 January, 1980 said that the response from the States to the programme of community ophthalmology has not been very encouraging. This workshop was called under the national plan in collaboration with World Health Organisation to consider the various aspects of eye health care delivery system. Dr. Madan Mohan, Chief Organiser and Professor at the Dr. Rajendra Prasad Centre for Ophthalmic Sciences urged the participants to study the problem in depth in order to monitor the programme effectively. He suggested that a good health information system be developed as early as possible. In this system both the Centre and States have to play their role. The work is being coordinated by the various regional directors and state coordinators. He said that it is much more economical to prevent the eye diseases than to cure them. It is therefore necessary that the people are well educated so that they can look after their health properly and prevent the needless eye disability and blindness which is a curse to the individual and imposes a huge economic burden on the society. The conference recommended that the medical and para-medical staff should take up health education activities as part of treatment to the extent possible. Suitable materials should be produced for distribution among the people. Efforts should also be made for integrated development and inclusion of suitable syllabi on eye health care in the respective training programmes of medical and para-medical personnel.

Suitable guidelines for health and other workers to help them undertake health education activities on eye health care should be encouraged. Orientation training programmes for teachers, community leaders, members of social and voluntary organisation and others on eye health care should be organised. The State and Union Territory health education bureau should be developed and special staff should be appointed for this programme. Suitable funds for health education bureau should be provided to enable to undertake health education activities including preparation and distribution of different types of media. To attract public attention on the subject of eye health care frequent exhibition should be organised. Similarly seminars and symposia should be held periodically as part of continuing education in the field of health education for all workers including administrators and industrialists. Chapters on eye health care in the textbooks from primary to higher secondary stages should be included and health education programmes should be organised in educational institutions. The Ministry of Information and Broadcasting should be requested to allocate more time for programmes on eye health on the TV and Radio. Emphasis should be given to spot announcements in the general as well as special audience programmes. The industrial organisations should set up eye safety measures in the workspots and bring about necessary modification in the environment to minimise ocular accidents. Education articles on eye health care should be regularly contributed to the newspapers, periodicals by ophthalmologists. Steps should also be taken to ensure proper distribution and utilisation of health education materials and to develop suitable educational programmes and materials for popularising eye bank movement in the community. With a view to modify the action programme suitable methodology should be developed to set feedback information for evaluation.

The meeting was attended by representatives of the State Medical Colleges from Gujarat, Kashmir, Maharashtra, Madhya Pradesh, Haryana, Uttar Pradesh and also from the Ministry of Education, Ministry of Health and the National Society for the Prevention of Blindness. The workshop held group discussions on health education, health care delivery in the community, epidemiological studies, training continuity education, manpower development and mobilisation of resources.

B.A. in physical education revived in Panjab

The Panjab University has decided to revive the bachelor in physical education course from the next academic session. A decision to this effect was taken at the meeting of the Academic Council of the University held in Chandigarh. It was also agreed at the meeting to start M.A. Urdu classes from the next session.

The Council also decided to set up a sub-committee to examine the possibility of starting a school of social sciences or a centre of behavioural sciences. As per the University Grants Commission decision, the subject of military science will be called defence studies in future and any student of pre-university can offer this subject. Previously only those students who fulfilled certain conditions could offer military science as an elective subject. The nomenclatures of four other courses have also been changed.

The diploma course in office organisation and procedures will be known as the postgraduate diploma in office organisation and procedures. The nomenclatures of diploma courses in marketing management and personnel management and labour welfare have been changed to postgraduate diplomas.

The Academic Council also decided that the syllabi once approved by the university would remain in force for a minimum period of three years. It also resolved to provide facilities to the students of Government College of Port Blair, an affiliate college of the university for doing research work at the Botanical Survey of India, Andaman and Nicobar Islands Circle Port Blair, in taxonomy, cytotaxonomy and ecology. The place has been recognised as a Ph.D. research centre.

The Academic Council also decided to continue with the existing system of appointing one internal examiner for pre-university class and one internal and one external for pre-medical/pre-engineering, BA/BSc classes for practical examination in physics, chemistry, botany, zoology and geography and it recommended to the college principals that the appointment of practical examiners should be made on a rotation basis. The students of B.Sc. have been allowed to offer one subject from the humanities and social sciences/languages group and two from sciences. Similarly a student of BA could offer one science subject out of the three with English as a compulsory subject. All those students who had passed the degree course in any faculty from this university or any other recognised university could join the one-year diploma course in Indian theatre at the university. Previously only BA/BSc degree holders were eligible for admission to this course. The Academic Council also decided that the M.Phil students after successfully completing the first semester would be allowed to complete the course within two years of admission to the course.

Mysore workshop on aerobiology

Dr. S. Majumdar, Deputy Director of the Central Food Technological Research Institute has urged the scientists to find out ways and means of solving problems of environment pollution as many diseases of both plant and human life were caused by spread of spores through air. He was inaugurating a three-day workshop on aerobiology organised under the joint auspices of the British Council in India and the CFTRI, Mysore. He said during the past few decades, aerobiology had become a very important subject of study on plant, animal and human pathology. About forty participants from the United Kingdom, University of Mysore, CFTRI, Indian Institute of Science, Defence Food Research Laboratory, Central Plantation Crops Research Institute and other universities in the country participated in the deliberations of the workshops held at Mysore.

Madras allows private candidates for higher secondary examination

Private candidates above 18 years of age will have a chance to appear for the higher secondary (plus two) education in Tamil Nadu. This decision has been taken in Madras by the reconstituted Tamil Nadu Board of Higher Secondary. The Board has also suggested that candidates with science optionals could be attached to the nearest Higher Secondary schools for their practicals. The Director of Education and Chairman of the Board, Dr. K. Venkatasubramaniam presided. The meeting was inaugurated by Mr. C. Aranganayagam, State Education Minister. He said that the progress made in the state at the vocational spheres was encouraging.

Prof. G.R. Damodaran, Vice-Chancellor of Madras University who was a special invitee on this occasion said that university would open evening courses to enable graduate teachers to upgrade their qualifications.

Dr. A. Venugopal, Madras University representative on the Board, said a bridge course in engineering or medicine or agriculture could be held so that vocational students could join straightaway the respective professional degree courses. The following new courses were approved: General education; statistics, Ayurveda under Indian systems of medicine; biochemistry; vocational education; printing and composing technology, foundry technology; catering with special reference to hotel management; advocates' assistants course; cement technology; synthetic germ cutting; communication skills with special reference to radio and TV; architects' assistant; cotton classifier in textile and dramatics.

Computer science courses at Calcutta

The University Council in its last meeting held in Calcutta decided to start a department on computer science. Dr. R.K. Poddar, Vice-Chancellor of the University soon after the meeting said that the course would start from the next academic session. To begin with ten students in B. Tech and another six students in M. Tech course would be enrolled.

Dr. Poddar said that Calcutta University would start construction of a housing estate on a 40-bigha plot of land in Sukehar and Sodepur railway stations. It would also have parks and hostels for teachers and staff of the university. The university would also approach the West Bengal Housing Board and the Life Insurance Corporation for financial assistance. The university may in the near future introduce transport service for the teachers and employees. For the present the job might be entrusted to any private transport agency.

Archival exhibition held in Calcutta

The past concealing from the brighter and darker sides of life of yore lies burried in a wealth of historical records preserved by the West Bengal Archives. These archives have been kept on view at a exhibition in Calcutta. Some of the important exhibits relate to Lord William Bentinck's decree abolishing the dreaded 'Sati' in 1829 while many will be horrified to read a report by James Alexander on the horrors of the famine of 1770. The West Bengal Archives organised a week long exhibition of historical records and documents as part of the archives week. The documents covered a wide range of subject—revenue administration in British India, salt trade, sati, famine of 1770, spread of education, urbanisation, indigo agitation and the freedom movement. A holograph minute by Lord Bentinck revealed the introduction of tea as a beverage to the common people of the country in 1834. An unknown charter of the life of Rabindranath Tagore who applied for an age certificate to the government on March 13, 1878, for appearing for the Indian Civil Service Examination has for the first time been made public. A series of documents on the 1831 revolt at Barasat also found a place with a document on the trial of Kanu Santhal, the leader of the Santhal rebellion. A number of other documents on Bengal's partition and the Swadeshi movement vis-a-vis the government's action against the agitators were among the exhibits besides a chart showing the intensity curve of anarchical activity in Bengal during 1905-17.

A telegram containing the first information about the armed uprising in Chittagong and government records indicating action to curb the rebellion were also exhibited. Documents on early English administration and revenue settlement, including the East India Company's investment policy and conferment of title of Maharajadhiraja on Raja Shibchandra of Nadia by Nawab Mubarak-ud-Daulah of Bengal were also on the view.

New agricultural strategy evolved

A three-pronged strategy for improving production and productivity conservation of the produce from harvest to consumption through increased purchasing power was outlined by the Union Minister of State for Agriculture, Mr. R.V. Swaminathan. The Minister was inaugurating a two-day regional meeting on agricultural development programme The meeting was attended by representatives of the Union Government, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Pondicherry and agricultural universities and finance institutions in the southern region.

The fall in foodgrains production during 1979-80 might not exceed ten per cent of the record level of 131.37 million tonnes achieved in the previous year. The drop in kharif production is likely to be about 12 million tonnes, the bulk of it being rice.

According to the Minister the drought conditions in major rabi growth areas in the country up to the first fortnight of November, 1979 would not have any serious effect on rabi crops in view of the beneficial rains thereafter. Under the strategy outlined by him production and productivity are sought to be improved through the elimination of the constraints responsible for the gap between potential and actual yields. For improving conservation both post harvest technologies and improvements in the public distribution system would have a significant role to play. The purchasing power of the people is to be increased by implementing food for work, food for nutrition, employment guarantee and integrated rural development programmes effectively with emphasis on small and marginal farmers.

Mr. Swaminathan emphasised that the only enduring solution lay in giant irrigation projects like the Ganga-Cauvery canal which would not only provide water but also employment. In a note submitted to the meeting, the Ministry has suggested that a twin approach be adopted for insulating the people in the drought affected areas from hunger. One is the expansion of the food for work programme and the other a food for nutrition programme. Besides the normal allotment of 1.5 million tonnes of foodgrains under the food for work programme, special allotments of two million tonnes have been made for payment as wages to those employed on durable community works in the drought affected areas. The Ministry feels that the programme should be used for implementing minor irrigation works like open and tube wells.

Supreme Court directives to Delhi Varsity

According to newspaper reports, the Supreme Court has directed Delhi University to appoint forthwith not later than two months now a time-bound committee to investigate in depth the justification for and the quantum of reservation of 70 per cent of the seats in the postgraduate course in the medical colleges for students graduating from Delhi.

The committee should carry out the investigation from the angle of equality of opportunity for every Indian but taking into consideration other constitutionally relevant criteria. The committee will study facts and figures and the realities of other universities and make recommendations on the question of university-based reservations and allied aspects as well as the modus operandi for implementation.

A Division Bench of the Supreme Court comprising Mr Justice V.R. Krishna Iyer and Mr Justice O. Chinnappa Reddy said the committee will be richer if it has a constitutional expert and a representative of the Indian Medical Council on it. Its report shall be considered by the university as soon as possible so that the admission for next year may be governed by the revised decisions of the concerned organs informed by the report. The court felt disturbed by the tendency to make each university as an insulated island of education, mindless of the integrity, unity and equal opportunity which are an inalienable part of our constitution. The court said that the Union of India had a special responsibility to ensure that provincialism in higher education did not erode the integrity of the country. 'Who lives if India dies' is a poignant interrogation with cultural projections in many dimensions, which our administrators are not aware of.

The Indian Medical Association cannot be a silent spectator or a static instrument but must initiate, in activist fashion, steps to make Indian medical education a meaningful asset to the nation.

The petitioner, Dr. Ramesh,

was denied admission to a postgraduate course in Delhi because of a rule reserving 70 per cent of the seats at the postgraduate level to Delhi graduates and the remaining 30 per cent open to all including those from Delhi. He challenged its vires as violative of Articles 14, 15 and 16 of the Constitution and sought the court's writ to direct the respondent to admit him to the M.D. course. The court directed the university to admit Dr. Ramesh to the M.D. course this year if the rules of attendance did not step in the way and if the Medical Council made an exception by agreeing to the addition of one seat as a special case for this year.

M.S. faculties file writ against Government

Eighteen teachers of the faculty of technology and engineering of M.S. University of Baroda have filed a writ petition in the Gujarat High Court against the University complaining that for the last seven years they have not been paid salaries in keeping with the scales laid down by the Sen Commission. Mr. S.C. Khurana, a spokesman of the teachers, said that they had been working as senior instructors since January 1, 1973. This post has been considered equivalent to the position of asssistant lecturer in other faculties of the university. The Commission's pay scales were applicable to these teachers. The government had however not approved the higher scales and the university had stopped payment to them.

Studies on modern history stressed

Prof. G. H. Khare, President of the Indian History Congress today pleaded for setting up of centres or board for modern Indian history and culture just like the centres for advanced study of ancient and medieval history.

Presiding over the 40th session of the Indian History Congress at Visakhapatnam Prof. Khare said the sources material for modern history are so vast by way of government records, various types of reports government and non-government periodicals, newspapers and correspondence of the great sons of India that this section will have to be split up into British domination period and independent India periods.

Prof. Khare said that there were some difficulties in the study of independent India period or current history. For firstly. there are many leaders who are still alive and who are actively taking part in current politics or history. Secondly, though some of the leaders are no more among us their devoted followers are still there. Thirdly, though some of the correspondence of these leaders is available to the public, the Government archivists are a bit conservative in this respect. They are not so liberal in attitude as the governments of European countries. Owing to these three impediments it is rather difficult to study current history objectively. But the people have begun to study this period also and this study must be encouraged.

Mr. B. Venkatarama Reddy, Education Minister, who inaugurated the Congress said that modern historian seems to have the dual task of discovering the few significant facts and interpreting them to make history. That is how a historian differs perhaps from a mere complier or chronicler.

The Education Minister said that the value of history as a special study in an educational institution is of paramount significance in ensuring an integrated society and unity of culture in our country.

The Vice-Chancellor of the Andhra University, Mr. M. R. Apparao welcoming the delegates said that he strongly felt that historical studies should be so reoriented that the historian can play his part not only in developing among the people the right of historical sense but in placing before them a vista of the future.

More than 600 delegates including four delegates from China and one from Australia attended the three-day conference.

Indian higher education system has created imbalances

The International Institute for Education Planning, Paris has brought out a comprehensive research report. The report credited to Mr. Qamar Uddin Khan of the Institute of Applied Manpower Research says that the Indian system of higher education has created an imbalance between supply of and demand for manpower. A paradoxical conclusion from this research study is that when higher education goes on expanding primarily for social and political reasons rather then on economic and manpower considerations, there is bound to develop a surplus of manpower. The employment market finds itself conditioned by the immediate resource scarcity.

There has been ten-fold increase in enrolment at the university level during the last twenty five years. In 1950-51 the enrolment was about 400,000 and it rose to to about four million in 1975-76. It is estimated to have touched the five million mark during 1978-79.

While the undergraduate enrolment during this period increased seven times, the graduate and the postgraduate level enrolment registered an increase of about fifteen times each. A feature of the higher education system in India is that it is highly subsidised. Despite surplus manpower the state remains committed to a liberal scholarship policy for the weaker sections of society including women and students from rural areas.

The labour force has been increasing so rapidly that absorption rates for all types of labour has either become stable or has declined. In India an overwhelming part of the total manpower needed will be primary and secondary level and not of the third level. Agriculture and allied activities will continue to absorb the largest number from the labour force and in this sector the largest number of highly educated persons will be few. It was found that even in the developed countries agriculture has only one per cent of its working force with third level education. In the trade and transport sectors however the share of the third level educated working force is only about five per cent. In view of this the growth of service and modern industry will be vital for the absorption of third level educated manpower.

Factors unintentionally resulting in less demand for labour include minimum wage laws, restrictive labour use, regulations, recognition of union activity and increased supervision of work rules by the government.

Kidwai pleads for a model Act

Dr. A.R. Kidwai, Governor of Bihar who is also the Chancellor of the State universities has pleaded for a high level commission to frame a model Act for all the universities in the State. He was talking to a delegation of Patna University Teachers Association. He said that the autonomy of the universities must be maintained at all costs. Mr. Ram Sunder Das, the Chief Minister, also talked to the delegation and assured them that necessary orders would be issued soon to remove the objectionable clauses of the recent Varsity Ordinance. He also assured of one promotion to every teacher and upgradation of demonstrators. The delegation consisted of Dr. Shreedhar Prasad Singh, Dr. S.K. Chatterjee, Dr. H.B.P. Sinha, Dr. M.O. Siddiqui and Mr. R.J. Bhatt.

Unesco drive to save monuments in Nepal

A massive international effort assisted by Unesco is under way in Nepal to restore the former splendour to some of the priceless monuments now in the state of decay in Kathmandu. Nepal has been receiving assistance from the world cultural body both by way of funds and experts in the restoration work since 1970. Mr. John Sanday, Unesco expert, is already in Kathmandu. He has informed that donations have been received from several countries including France, Italy, West Germany and Japan on a bilateral basis. It is hoped that by September, 1980 about 35 per cent of buildings in a state of disrepair had already been covered. With this the second phase of the restoration work in the valley was completed in the past five years at a total cost of Rs. 32 millions.

Sarabhai awards announced

Four distinguished scientists have been selected for the award of Dr. Vikram Sarabhai research awards endowed by the Hari Om Ashram. The scientists are: Professor A. B. Bhattacharya (IIT, New Delhi); Dr. K. S. Krishnaswamy (TIFR, Bombay); Mrs. K. Ghosh (Meteorological Office, New Delhi) and Dr. S.C. Gupta (ISRO, Trivandrum). The awards, each carrying a medal and cash prize of Rs. 8,000 will be presented on the birthday of Dr. Vikram Sarabhai on August 12 at the Physical Research Laboratory, Ahmedabad.

Khairagarh Varsity honours musicians

The Indira Kala Sangit Vishwavidyalaya, Khairagarh, the University of Music and Fine Arts in the country, conferred the honorary D. Litt. on Smt. Rukmini Devi Arundale, Smt. M.S. Subbulakhmi and Km. Lata Mangeshkar at its seventh convocation held in February 1980.

Shri C.M. Poonacha, Governor-Chancellor of the University addressed the convocation.

Khairagarh Varsity seminar on Sur Sahitya

The Indira Kala Sangit Vishwavidyalaya, Khairagarh, organised a three-day seminar on 'sur sahitya ka sangeetik vishleshan' recently with the financial assistance from the University Grants Commission. Shri Prabhakar Machave inaugurated the seminar. A number of musicians and noted persons in the field of Hindi literature and poetry attended the Seminar.

Gwalior organises NCC seminar

A seminar was organised by the NCC Directorate, Gwalior at the NCC Headquarters on 24th January, 1980 on the 'Impact of NCC training on today's youth". It was presided by the Vice-Chancellor of Jiwaji University.

A committee under the chairmanship of Pt. H.N. Kunzuru was set up in the year 1946 to study this question and on its recommendation, NCC was started in the year 1948 under the NCC Act, 1948.

Among the main theme of the NCC and objectives are building of character, creating a force of discipline which is of use in national emergency as a second line of defence, developing a sense of leadership and self-discipline and unit.

The impact of NCC on today's youth has been very beneficial not only to the cadets but also to the nation. They develop a

(*Continued on page 102*)

Personal

1. **Mr. Ninan Abraham, Principal, Christ Church College, Kanpur, has taken over as Acting Vice-Chancellor of Kanpur University vice Dr. R. S. Misra who has resigned.**
2. **Dr. K. P. Misra, Professor of International Relations has been appointed Dean of the School of International Studies, Jawaharlal Nehru University, New Delhi with effect from February 8, 1980.**
3. **Prof. M.G.K. Menon, eminent physicist and Secretary in the Department of Science and Technology has been elected general president of the Indian Science Congress for the year 1982.**
4. **Dr. A.S. Dhaliwal. Reader in the Department of Psychology, Guru Nanak Dev University has been appointed as the University Controller of Examinations.**

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Adikesavan, A.S. Contributions relating to Taylor series methods in numerical analysis. University of Madras.
2. Bagla, Krishan Lal. Stability of density stratified flows and thermally stratified layer. Meerut University.
3. Behera, Siba Charan. A few problems on the flow of elastico-viscous liquids. Utkal University.
4. Bhatt, Subhashchandra Jayantilal. Generalized B-algebras. Sardar Patel University.
5. Das, Rabindra Nath. Exact solution of equation of radiative transfer problems for semi-infinite, plane parallel, scattering atmosphere by a method based on lapalce transform and Winer Hopf technique. North Bengal University.
6. Mittal, Pramod Kumar. Analytical transfer process. Agra University.
7. Palled, Shivappa Veerappa. Some contributions to the theory of vector lattice-valued measures. University of Madras.
8. Pandey, Diwakar, Absolute summability of ultraspherical series. Meerut University.
9. Rohini, G. Stability of flows through porous media. Bangalore University.
10. Sharma, Shrido. Transform calculus and its applications to special functions. Meerut University.
11. Singh, Deo Mani. Subspaces and external surface of areal aspects. *D. Litt.* Agra University.
12. Srivastava, Harsiya Prakash. A study of generalized functions of two variables. University of Indore.
13. Upadhyaya, B. Shreekantha. Composition factors and filtrations with Weyl Module quotients of the principal indecomposable modules for the group SL(2,q). University of Madras.
14. Uralegaddi, Basappa Amrutappa. Some studies in univalent functions. Karnatak University.
15. Veerabhadraiah, R. Non-steady and steady flows in a porous medium. Bangalore University.
16. Venkatesulu, M. Existential analysis of multi-point boundary value problems via Galerkin method. I.I.T., Kanpur.
17. Wagneo, Chaman Lal. A study of right Noetherian rings integral over their centres. I.I.T., Kanpur.
18. Zachariah, Jacob. Some problems of MHD flow past solid bodies and thermal convection in MHD. Gauhati University.

Opertional Research

1. Srinivasan, B. Performance amelioration of relational data bases. I.I.T., Kanpur.

Physics

1. Ghosh, Pranab Kumar. Some aspects of modelling of physiology systems. University of Calcutta.
2. Jani, A.R. Lattice dynamics of some cubic metals. Gujarat University.
3. Mathew, Philip. Study of the spectra of some diatomic molecules: Bif, PbF and Pbcl. University of Baroda.
4. Nagaraj, S.T. Flow through porous medica. Bangalore University.
5. Narayan, Ramesh. A new approach to the compressibility of ions of ionic crystals. Bangalore University.
6. Narayana Rao, D. Spectroscopic investigation of some rare earth ions in fluorite type crystals. I.I.T., Kanpur.
7. Otia, Jayant Ramanlal. Ultrasonic studies in liquid crystalline mixtures. M.S. University of Baroda.
8. Patil, Vishwas Uttamrao. Mossbauer studies of spinal ferrites. Marathwada University.
9. Ramachandra Reddy, G. A study of noise problems in optical information processing. Kakatiya University.
10. Ram Prakash. Studies on the elastic and dielectric properties of the cubic structure solids. Agra University.
11. Ramaswamy, C.R. Studies on the energy levels of ^{71}As and ^{73} As via ^{70}Ge (p.p) ^{70}Ge and ^{72}Ge (^{3} Held) ^{73}As reactions. Bangalore University.
12. Sarkar, Kalyan Kumar. Studies on the dielectric behaviour of AN BBN type binary solids. Agra University.
13. Sengupta, Probal Kanti. Some aspects of multiparticle production in high energy interactions. University of Delhi.
14. Seth, Brij Mohan. Electron spin resonance spectra of some organic molecules. University of Delhi.
15. Sharma, Laxmi Prasad. Stuides on the cohesion of I-VII and II-VI crystals in the Born model. Agra University.
16. Singh, Ram Pal. Studies on the short range interatomic potentials in ionic crystals. Agra University.
17. Subrahmanyam, A. Fabrication and study of the gallium arsenide laser and laser modulation techniques. University of Delhi.
18. Swaminathna, K. Dynamics of crystalline and noncrystalline polyethylene and effect of collective modes on thermal neutron transport in hydrogenous moderators. University of Delhi.
19. Vats, Hari Om. Irregularities in the upper atmosphere. Gujarat University.

Chemistry

1. Agarwal, Kali Charan. Physico-chemical investigations of some ternary systems. Agra University.
2. Ansari, Mohammad Aslam. Reaction of benzoylperoxide on certain phenolic and allied compounds and synthesis of certain 2:2-dimethy1-5:7-dihydroxychromene derivatives. University of Delhi.
3. Ashok Kumar. Studies on polariographic maxina of some depolarizers. Agra University.
4. Bhatia, M.S. Synthesis of nitrogen and sulphur containing medicinally important compounds. Gujarat University.
5. Chintalpudi, R.S. Studies on proteins and amino acids in cereals and pulses grown in Ahmedabad District. Gujarat University.
6. Desai, K.K. Studies on O-hydroxy ketoximes as analytical reagents. Gujarat University.
7. Desai, S.T. Corrosion inhibition. Gujarat University.
8. Gangopadhyaya, Subhendunarayan. Photochemical studies on Indian plants. University of Calcutta.
9. Goel, Ratan Lal. Studies of Schiff base complexes with transition metals. Meerut University.
10. Gurtu, Jagat Narain. Stereochemical features vis-a-vis spectral and magnetic data of some metal complexes of nitrogen and oxygen donor ligand. Meerut University.
11. Har Vir Singh. Solubilizing action and physical properties of manganese soaps. Meerut University.
12. Jagannathan, R. Coordination chemistry of lanthanides: Structural studies on the complexes of lanthanides with bidentate tridentate ligands. I.I.Sc., Bangalore.
13. Jai Singh. Kinetics of Cu(II) catalysed oxidation of organic compounds by alkaline hexacyanoferrate (III). Agra University.
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15. Khera, Harish Chandra. Magneto-optic properties of some transition metal ions with nitrogen and oxygen containing ligand. Meerut University.
16. Lahoti, Rajgopal Jagannath. Applications of NMR and mass spectra: Structures of commercial dyes. Shivaji University.
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19. Marcus, Sara Rani. Biochemical studies of esterases present in the insect, Haltica caerulea Olivier. Bangalore University.

20. Medhi, O.K. Mossbauer spectroscopic investigation of Eu (III) complexes and studies on some Ru(III) complexes by EPR and other physical methods. I.I.T., Kanpur.

21. Mehta, Arvindkumar G. Cyclisation of B-arylamino cinnamo-and croton-o-arylanilides in presence of poly phosphoric acid and application of some such cinnamoanilides as analytical reagents. South Gujarat University.

22. Nagaraja, R. Effect of corticosteroids and age on nitrogen metabolism in albino rats. Bangalore University.

23. Nandibewoor, Sharanappa Totappa. A study of the kinetics and mechanism of oxidation of some organic compounds. Karnatak University.

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32. Ram Sharan. Studies on the preparation and characterization of some new organometallic compounds of titanium. University of Delhi.

33. Rudresh. H.B. Inhibitors for corrosion of zinc in acidic solutions. Bangalore University.

34. Sambasiva Rao, Arepalli. Structural studies on the polysaccharide from Kelebsiella bacteria type $^{61}{}_{60}$. University of Calcutta.

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36. Shrivastava, Laxman Prasad. Chemical studies on metanil yellow toxicity. Kanpur University.

37. Siddiqi, Mushtaq Ahmad. Chemistry of natural products. University of Jammu.

38. Singh, Tribhuwan. Complexing behaviour of N-ethoxycarbonylpyrrole-2-thiocarboxamide and N-phenylcarbamoylpyrrole-2-thiocarboxamide. I.I.T., Kanpur.

39. Sundaram, P.M. Synthetic and kinetic investigations of aminolysis reactions of chlorocyclophosphazenes. I.I.Sc., Bangalore.

40. Varshney, Asharfi Lal. Coordination compounds of hydrazine dervatives with some transition metals. Meerut University.

Earth Sciences

1. Basappa Reddy, M. Hydro-geology of the Upper Cauvery Basin. Bangalore University.

2. Bhaskarao Rao, Dommeti. Some studies in quantitative interpretation of gravity and magnetic anomalies. Andhra University.

3. Desai, Nikhilkumar Dhirajlal. Dimension stones of Gujarat. M.S. University of Baroda.

4. Sharma, Toran. Geology of the Kusma Phalebas area in Central West Nepal with special reference to the structural and geomorphological evolution. M.S. University of Baroda.

Engineering & Technology

1. Awasthi, S.K. Low temperature catalytic gasification of coal. Kanpur University.

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3. Dwarakanath, G.K. Hydrodynamics and mass transport in pulsed extraction columns. University of Madras.

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1. Raychaudhuri, Amal. Comparative studies on physiology of spermatogenesis. University of Calcutta.

Microbiology

1. Jayaram, B.M. Studies on the protein synthesis in macroconidia of Microsporum canis. I.I.Sc., Bangalore.

Marine Biology

1. Manimozhi, K. Studies on biology and physiology of fresh water Plannaria with special reference to cephalic regeneration. University of Madras.

2. Seshagiri Rao, Krovvidi Rama. A study of the systematics of the prawns, shrimps and amphipods of Lake Kolleru in Andhra Pradesh and of the fauna associated with the aquatic macrophyte Eichhornia crassipes Solms, 1883 (Pontederiaceae). Andhra University.

Biophysics

1. Mitra, Jayati. Studies on O-H-O hydrogen bonds and conformation of cyclic hexadepsipeptides. Bangalore University.

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Biochemistry

1. Geetha, B. On the nature and significance of the changes in compositions of collagens of some invertebrates. University of Madras.

2. Kuberasampath, T. Biochemical studies on collagen in adjuvant induced arthritis. University of Madras.

3. Paliyath, Gopinadhan. Investigations on growth, auxin transport, haustoria formation and free amino acids in the angiospermic plant parasite Cuscuta chinesis, Lamk, I.I.Sc., Bangalore.

4. Ramakrishna, N. Characterisation of colitis bacteriophage and a phage-specific messenger RNA. I.I.Sc., Bangalore.

Botany

1. Agarwal, Kusum. Cytogenetic studies in Trifolieae and Galegeae with special emphasis on Indigofera L. Meerut University.

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Zoology

1. Avinendra Kumar. Histochemical and biochemical studies on the effect of lead and mercury in the hepatic and renal systems of rat. Meerut University.

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24. Sivaraman, S. Studies on some Indian pseudocorpions. University of Madras.

Medical Sciences

1. Haridas, N. Studies on plasma lipid, protein and blood haemoglobin-concentration of the neonatal infants. M.S. University of Baroda.

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15. Yadav, Shri Krishan. Effect of levels of irrigation and use of antitrans pirants on growth, yield, nutrient uptake and water use efficiency of barley, Hordeum vulgare L. Haryana Agricultural University.

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Veterinary Science

1. Deshpande, Krishnaji Shankar. Studies on diaphragmatic hernia in bovines and its repair. Haryana Agricultural University.

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7. Singh, Harindra Nath. Estimates of various genetic and phenotypic parameters in the purebred and crossbred populations of two broler breeds. Agra University.

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Advertisement No. (16/1979-80)

APPLICATIONS are invited for the undermentioned posts. The benefit of Provident Fund/Pension, Dearness Allowances, House Rent Allowances and City Compensatory Allowances are admissible according to University rules. The retirement age of University Employees is 60 years. The appointment will be made on two years probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft or Crossed Indian Postal Orders for Rs. 7.50 in favour of the Registrar, Banaras Hindu University towards the application fee. Application forms alongwith the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005 on receipt of Re. 0.60 paise stamped self-addressed envelope of 23 cm x 10 cm size. Candidates called for interview for these posts will be paid actual Railway Fare by the Second Class plus reservation charges for sleeper, if paid, and/or actual Bus fare from the present residence both ways by the shortest route as per University Rules. No other expenses will be paid.

Application for each post be sent separately alongwith attested copies of certificates in support of the qualifications and experience mentioned in the application and be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005.

Incomplete application in any respect will not be entertained for consideration.

Those who are in service should apply through proper channel. M.O. or Cheque will not be accepted towards the application fee.

For the posts of Lecturers, other things being equal preference will be given to Scheduled Castes/Scheduled Tribes candidates who are considered fit.

Applicants may send their bio-data alongwith attested copies of all the certificates and details on plain paper alongwith the application fee of Rs. 7.50 in Bank Draft/I.P.O. to avoid delay in case they do not get the prescribed form in time.

Note: Number of vacancies are tentative and can vary according to needs.

Last date for Receipt of Application is February 23, 1980.

FACULTIES OF SCIENCE & HUMANITIES

Grade:

Professor Rs. 1500-60-1800-100-2000-125/2-2500.
Reader Rs. 1200-50-1300-60-1900.
Lecturer Rs. 700-40-1100-50-1600.

1. **Professor of Psychology** (Clinical/Industrial Psychology (One)
2. **Professor of Philosophy (One)**
3. **Professor of Plant Physiology (One)**
4. **Professor of Physics (One)** (Experimental Spectroscopy)

Qualifications

Essential

(1) An eminent scholar with published work of high quality, actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Desirable

(1) (a) Outstanding experimental research in any area of Spectroscopy.
    (b) International recognition in the field of specialisation (applicable only for the post of Professor of Physics (Experimental Spectroscopy).

5. **Professor of Vocal Music** (One)

Qualifications Essential:

(1) First or Second class Post-Graduate Degree in Vocal Music of a University or recognised Institution with sound knowledge of theory and history of Indian Music and good reputation as a vocalist.
(2) A Doctorate Degree (D. Mus./Ph.D. Mus.) or published work of an equally high standard.
(3) About ten years experience of Post-Doctoral research and/or teaching at a University or College.
(4) Ability to guide research.

6. **Reader in English** (One) (Mahila Mahavidyalaya)
7. **Reader in Political Science** (One) (Mahila Mahavidyalaya)
8. **Reader in Physical Education** (One)
9. **Reader in Economics** (Econometrics) (One)

Qualifications Essential:

Good academic record with a Doctorate Degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

Note: Other things being equal preference will be given to women candidates (applicable only for the posts of Reader in English and Reader in Political Science in Mahila Mahavidyalaya).

10. **Lecturer in Geophysics** (Meteorology) (One)
11. **Lecturer in Geophysics** (Electronics) (One)
12. **Lecturer in Geophysics** (Electrical Methods) (One)
13. **Lecturer in Geophysics** (Gravity and Magnetic Methods) (One)

14. Lecturer in Geophysics
(Exploration Geophysics) (One)
15. Lecturer in Library Science (One)

Qualifications Essential:

(1) A Doctor's Degree or research work of an equally high standard; and

(2) Consistently good academic record with a first or high second class (B in the seven point scale) Master's Degree in the subject or an equivalent degree of a foreign University.

(1) Preference will be given to the candidates having experience of repair & maintanance of Geophysical instruments (applicable only for the post of Lecturer in Geophysics (Electronics).

(2) (a) Sound knowledge of latest technique in Library and Information Science.

(b) Ability to teach Information Storage and Retrieval Methods and/or Information Sources.

(c) Ability to teach in English and Hindi both and knowledge of teaching methods.

(d) Aptitude for research as evident through writings.

(e) Experience of teaching Library and Information Science (applicable for the post of Lecturer in Library Science).

Having regard to the need for developing inter-disciplinary programme, the degrees in essential qualification No. (1) and (2) above may be in relevant subject.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualification prescribed in essential qualification No. 2 above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in a research/laboratory organisation on the condition that he will have to obtain a Doctor's Degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Explanation

Candidates for being eligible for recruitment to the post of Lecturer must have a first or high second class (B in the seven point scale) at the Master's level and for determining High Second class the mid-point between the minimum percentage of marks fixed by a University for award of Second Division and first Division may be taken and for determining consistently good academic record on average of 55% of the two examinations prior to Master's Degree (irrespective of the marks obtained in any of the two examinations) or 50% marks in each of the two examinations separately.

INSTITUTE OF TECHNOLOGY

Grade:

Professor Rs. 1500-60-1800-100-2000-125/2-2500.
Reader Rs. 1200-50-1300-60-1900.
Lecturer Rs. 700-40-1100-50-1600.

16. **Professor of Mechanical Engg.** (Turbe Machinery) (One)
17. **Professor of Mechanical Engg.** (Industrial Management) (One)
18. **Professor of Mechanical Engg.** (Production Engg.) (One)
19. **Professor of Mechanical Engg.** (Thermal Engg.) (One)
20. **Professor of Chemical Engg.** (Computer aided Plant Design/System Engg.) (One)
21. **Professor of Chemical Engg.** (Process Dynamics and Control) (One)
22. **Professor of Chemical Engg.** (Electrochemical Processes/Transport Phonomena/Process Development) (One)

Qualifications Essential

(1) Doctorate Degree and/or published work of very high standard.

(2) A first or second class Master's Degree in the subject concerned or an equivalent qualification.

(3) About ten years experience in responsible position in teaching/research/industry.

(4) Experience of having guided research work of a high standard or evidence of original work in Design/Development.

Desirable

(1) Corporate Membership/Fellowship of Professional organisations/learned Societies.

(2) Research publications in Standard journals.

23. **Reader in Mechanical Engg.** (Industrial Engg.) (One)
24. **Reader in Pharmaceutics** (Industrial Microbiology) (One)

Qualifications Essential

(1) Doctorate Degree in the subject or published work of an equally high standard.

(2) A first or Second class Master's Degree in the subject concerned or an equivalent qualification.

(3) About five years experience in responsible position in Teaching/Research/Industry.

Desirable

(1) Research publications in standard journals.

(2) Membership of learned bodies and societies.

25. **Reader in Chemical Engineering** (two posts)

Qualifications Essential:

(1) Doctorate Degree in the subject or published work of an equally high standard.

(2) A first or second class Master's Degree in the subject or an equivalent qualification.

(3) About five years experience in a responsible position in teaching/research/industry.

Specialization

Reaction Engineering/Thermodynamics/Pollution Control/Non-conventional energy systems for one post and Heat Mass Momentum Transfer/Computer aided design and analysis for the second post.

Desirable:

Research publications in standard journals.

26. **Lecturer in Chemical Engineering** (One)
27. **Lecturer in Drawing and Design** (One) (Dept. of Chemical Engg.)

Qualifications Essential:

(1) Consistently good academic record with first or high second class (B+) Master's Degree in Chemical Engg. or an equivalant qualification.

(2) Some experience in teaching/research/industry.

Desirable

(1) Doctorate Degree in Chemical Engineering.

(2) Experience of teaching drawing and design (applicable only for the post of Lecturer in Drawing and Design).

Note: Those who have obtained Doctor's Degree in the subject concerned will also be considered irrespective of the fact whether they have Post-Graduate Degree in the subject or not (applicable for all the above posts in the Institute of Technology).

INSTITUTE OF MEDICAL SCIENCES

Grade

Reader : Rs. 1200-50-1300-60-1900
Lecturer: Rs. 700-40-1100-50-1600
plus N.P.A. as per rules admissible only to Medical Graduates.

28. **Reader in Anaesthesiology** (One)

Qualifications. Essential

(1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India.

(2) M.D./M.S. (Anaesthesiology), Speciality Board of U.S.A., F.F.A. R.C.S. (by Exam).

(3) Three years teaching experience as Lecturer/Assistant Professor in Anaesthesiology of a recognised Institution.

Desirable

(1) Research experience and publication in the Scientific journals.

(2) Ability to teach and guide P.G. students.

(3) Ability to undertake teaching work in Hindi will be considered as additional qualification.

29. **Lecturer in E.N.T.** (One)

Qualifications: Essential

(1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India.

(2) M.S. (Oto-Rhino-Laryngology) or equivalent qualification recognised by the Medical Council of India,

Speciality Board of Oto-Rhino-Laryngology (U.S.A.), F.R.C.S. (E.N.T.).

(3) Three years teaching experience as Clinical Registrar/Tutor/Resident or equivalent post in the speciality in a recognised teaching Institution of which one year should be after P.G. qualification.

Desirable: Publications.

30. **Lecturer in Anatomy** (Two posts)

Qualifications Essential:

(1) M.B.B.S. or an equivalent qualification recognised by the Medical Council of India.

(2) M.S. (Anatomy, M.Sc. (Anatomy), Ph.D. (Anatomy).

(3) Three years teaching experience as Tutor/Demonstrator in Anatomy of which one year should be after Post-graduate qualification.

Note: 1. Non-Medical candidates with M.Sc./Ph.D./D.Sc. in Anatomy will also be considered.

2. For one of the posts research experience in Chromosome/Cytogenetics is essential for which Ph.D. in allied subjects will also be considered.

31. **Research Officer** (Neuro-Physiology Unit, Dept. of Physiology) (One)
Grade: Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications Essential:

(1) M.B.B.S. or M.Sc. Physiology with Biophysics special paper.

(2) Ph.D./M.D. Physiology.

Desirable

(1) Experience in Electronic instruments.

S.S. HOSPITAL

32. **Assistant Medical Superintendent** (One)
Grade: Rs. 700-40-900-EB-40-1100-50-1300 plus N.P.A. admissible as per rules.

Qualifications Essenial:

(1) M.B.B.S. Degree recognised by the Medical Council of India.

(2) Post-Graduate Degree in any Clinical subject.

(3) Working experience in a teaching Hospital.

Desirble

(1) Post-Graduate Degree in Hospital Administration.

OTHERS

33. **Assistant Registrars**
Grade: Rs.700-40-900-EB-40-1100-50-1300.

Qualifications Essential:

(1) Graduate of a recognised University.

(2) About five years experience of Administration and/or Secretarial work in a supervisory capacity.

(3) Good knowledge of accounts, audit and personnel management either in a University or in a Central Government Department/Undertaking.

(4) Good knowledge of Hindi.

THE UNIVERSITY OF BURDWAN

RAJBATI : BURDWAN
WEST BENGAL

Advertisement No. 12/79-80
Dated 11th February, 1980

Applications in the prescribed form are invited for the following posts in the approved scales of pay of Rs. 700-40-1100-50-1600/- with allowances and other benefits according to University Rules.

A. **Department of Philosophy**

(i)—Lecturer—One post (lien bound but likely to be permanent)

B. **Department of Physics**

(i)—Lecturer—One post (lien bound but likely to be permanent)

Minimum Qualifications

1.(a) A doctor's degree or published research work of an equally high standard, and

(b) Consistently good academic record with first or high Second Class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University.

Desirable Qualifications : Specialisation or Proficiency

For A(i) : Symbolic Logic with ability to teach analytic Philosophy

For B(i) : M.Sc. in Physics with Radio Physics & Electronics or M.Tech. Radio Physics & Electronics. The candidate should also have the specialisation in communication systems/Non-linear Oscillations.

The University Council may on recommendations of the appropriate Selecton Committee, waive any of the requirements in view of the candidates specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0. 40p.) envelope (9" x 4").

Last date for submission of applications with requisite fee of Rs. 5/- is **28th February, 1980.**

A.K. Chaudhuri
REGISTRAR

Campus News

(Continued from page 94)

sense of discipline, sportsmanship feeling, build character befitting to them and in the last wars the forces of NCC have helped the army and in the internal peace and working of the country. The cadets have been able to build good body and good health. The cadets have worked as one for all and all for one.

Most of the people selected in NDA/PSC/Engineering/IMA are good cadets having NCC background. While in service they also get advantage for participating in this extra curricular activity.

It is known as the only organisation imparting miliary training to the students and provides line of action for today's youth. Rs 46 crores has been earmarked for 1978-1982 by the Government of India for the development of this scheme.

Seminar on Premchand

The Maharashtra State Urdu Academy held a two-day seminar in the honour of a noted novelist, Munshi Prem Chand at Bombay. Dr Ishaq Jamkhanavala, Chairman of the Academy, inaugurated the seminar and Shri Vinayakrao Patil attended the seminar on the concluding day. Mr Ali Sardar Jaffri, Mr Majrooh Sultanpuri, Mr Sahir Ludhianvi, Mr Akhtarul Iman, Mr Kaifi Azami and Mr Hasan Kamal also participated

India ranks second

India ranks second in the world in respect of medical schools, according to the World Directory of Medical schools published by the World Health Organisation. The USA ranks first with 123 medical schools followed by India with 100 schools. China and the USSR rank third with 87 schools each followed by Brazil (75), Japan (69) and Mexico(52). The WHO data relates to 1975.

ANDHRA UNIVERSITY
WALTAIR
Advertisement No. 1/80

Applications in the prescribed form are invited for the following posts so as to reach the Registrar, Andhra University, Waltair on or before **7th March 1980**. Each application shall be accompanied by a Crossed Indian Postal Order for Rs. 10/- (Rupees ten only) or a Bank receipt remitting the amount in the State Bank of India to the credit of Andhra University General Account (Ordinary) towards the Registration fee for the application.

S.No.	Department	Subject	Professor	Reader	Lecturer
1.	Mathematics		—	—	1*
2.	Education		1	—	—
3.	Coop. & App. Econ.		—	2	1*
4.	Sociology		—	1*	—
5.	English		1	1	1 (Engg. Col)
6.	Politics & Pub. Admn.	Politics	1*	—	—
		Politics & Pub. Admn.	—	1 (Kakinada)	—
7.	Nuclear Physics		—	1*	—
8.	Chemistry		—	—	2*
9.	Marine Science		—	—	1
10.	Statistics		1	—	1*
11.	Civil Engg.	(Two Lecturers for Civil Engg. One Lecturer for Geo-Engg.)	1*	—	3
12.	Mech. Engg.	(One Professor for Naval Architecture and one Professor for Material Handling Systems). (One Reader for Industrial Engg., two Readers for Mech. Engg.) (One Lecturer for Marine Engg., three Lecturers for Mech. Engg.)	2	3	4
13.	Mathematics Section	Applied Mathematics	—	—	1 (Engg. Col.)
14.	Elec. Engg.	(One Professor for Electrical, One Professor for Tele-Communications). (One Reader for Electronic Devices, (One Reader for Electronic Circuits).	1+1*	2	—
15.	Chem. Engg.		—	1*	—
16.	School of C.C.	(One for History; One for Pol. & Pub. Admn., One for Commerce).	—	—	3 (Asst. Directors)

* Temporary.

NOTE: The rule of Reservation for S.C./S.T./B.C. candidates is applicable for the posts of Lecturers and Asst. Directors.

Scale of pay
Professors: Rs. 1500-60-1800-100-2000-125/2-2500.
Readers: Rs. 1200-50-1300-60-1900.
Lecturers: Rs. 700-40-1100-50-1600.
Asst. Directors: Rs. 400-40-800-50-950 (Non D.A. merged Scale)

The details of qualifications prescribed in respect of the above posts including the particulars and precise branch of specialisation which is needed and also the preferential qualifications considered desirable will be furnished alongwith the application form.

Requisition for the application forms may be made to Sri P. Hanumantha Rao Joint Registrar, Andhra University, Waltair accompanied by a self addressed and stamped envelope and a State Bank of India challan or a crossed Indian Postal Order for one Rupee. The University reserves the right to fill or not to fill all or any of the posts. The cover containing the application should be superscribed as "APPLICATION FOR APPOINTMENT TO THE POST OF————————". Applications received after 5.00 P.M. on **7th March 1980** will not be entertained.

M. Gopalakrishna Reddy
REGISTRAR

KUMAUN UNIVERSITY
NAINITAL
Advertisement No. 6089
Dated 6-2-1980

Applications are invited for the following temporary posts likely to become permanent in due course. The number of vacancies and the required fields of specialization, if any, are indicated in each case. However, the University reserves the right to alter the number of vacancies. Hill Development Allowance of Rs. 100/- and Dearness Allowance as admissible under University rules, will also be payable.

Professors (Rs. 1500-2500): One each in Physics, Geography, Law and Zoology.

Readers (Rs. 1200-1900): One each in Hindi (Literature/Linguistics), English (Literature), and Commerce (Management Accounting/Taxation/Management Information System/Marketing/Personnel/Operations Research/Public Enterprises/Finance/Managerial Economics/International Trade/Labour Economics).

Lecturers (Rs. 700-1600): Five in English (Literature/Linguistics). Two each in Geography (Geomorphology/Regional Development and Planning/Physical/Urban), Sanskrit (Literature/Veda/Indian Philosophy), Zoology (Cytogenetics/Fish Biology and Limnology).

One each in Commerce (specialization same as for Readers post), History (Medival India), Law, Music (Tabla) Psychology (Counselling/Testing/Experimental), Physics (Theoretical/Nuclear/Solid State/Electronics).

The History post is a leave vacancy upto 30 November, 1980.

Qualifications

(1) Doctorate degree and/or published work of high standard in the subject (For lecturer in Law, the qualification is LL.M.).
(2) Consistently good academic record with at least a high second class at Master's level as prescribed by U.G.C.
(3) At least 10 years' experience of teaching post-graduate classes and/or of post Ph.D. research for Professors and 5 years for Readers.

Further details regarding qualifications, service terms and permissible relaxations in qualifications will be provided with application forms. Reservation for S/T, S/C candidates as per normal rules.

Prescribed application forms available by post from the Registrar, Kumaun University, Nainital-263001 on payment of postal charges etc. of Rs. 4/- by crossed Postal Order/Bank Draft (but not money order) payable to Finance Officer, Kumaun University, alongwith self addressed envelope of size 23 x 10 cm. Forms can also be obtained personally from the University Office free of cost.

Last date for receipt of application is **22 March, 1980**. Applications received after the above date will not be entertained. Candidates who have already applied for posts of Professor of Law and Lecturer in Sanskrit in response to earlier advertisements need not send fresh applications.

REGISTRAR

UNIVERSITY OF INDORE INDORE

No. Estt/III(15)/79
Dated : January 29, 1980.
Advertisement

Applications on the prescribed form obtainable from the University Office on payment of Rs. 3/- (in the shape of Crossed Indian Postal Order or Demand Draft Payable to the Registrar, University of Indore) are invited for the following posts in the University Teaching Departments.

Department	Number of Posts		
	Professor	Reader	Lecturer
Statistics	—	1	1
Life-Sciences	—	3	2
Physics	—	1 (Solid State)	1
Mathematics	—	1	1
Economics	—	—	1
Education	—	—	2
Chemistry	1 (Theoretical/ Analytical)	1 (Organic/ Inorganic)	3
Social Studies	1	—	—
Pharmacy	1	1	5

2. The Pay-Scale of the posts are :

(i) PROFESSOR—1500-60-1800-100-2000-125/2-2500
(ii) READER —1200-50-1300-60-1900
(iii) LECTURER —700-40-1100-50-1600

3. ESSENTIAL MINIMUM QUALIFICATIONS

For Professors and Readers

(a)(i): A Doctor's Degre or published work of an equivalent high standard; and

(b) (i): A 2nd Class Master's Degree in the relevant subject with at least 50% marks (B in the seven point scale) or an equivalent degree of a foreign University; and

N.B.: while taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded.

(ii): Atleast 50% marks at the Bachelor's degree examination on the basis of which division is awarded at the degree level by the University; and

(iii): Atleast 50% marks at the Higher Secondary/Intermediate /Pre-University Examination, as the case may be; and

(c) (i): In the case of professors the experience of teaching of post-graduate classes shall be atleast 10 years and in the case of Readers the experience of teaching post-graduate classes shall be atleast 5 years; and

(ii): In case of Professors, evidence of candidates having been awarded a Doctor's degree under his supervision and in the case of Reader atleast three years experience of guiding research. In case of Professor pharmaceutical science evidence of candidate/s having been awarded a Doctor's degree under his supervision or industrial or field experience.

(iii) Working knowledge of HINDI.

For Lecturers

Qualifications same as prescribed for Professors and Readers under (a) (i) and (b).

Having regard to the need for developing inter-disciplinary programmes the degree in (a) and (b)(i) above may be in the relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published research work is of very high standard, it may relax any of the qualifications prescribed (for all above posts) under (b) above.

N.B.(i): The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of scheduled castes/scheduled tribes candidates.

(ii): For the posts of Reader and Lecturers in Life-Sciences those who possess M.Sc. degree in any branch of biological sciences may apply.

(iii): For the post of Professor of Social Studies, those who possess degree at the Master's level/Doctorate standard in any branch of Sociology or Social Anthropology with an aptitude and experience of working in tribal areas may apply.

4. Desirable Qualifications

(i) For Reader in Statistics

Specialisation in any branch of Statistical Inference, Probability and Stochastic Process and Multivariate Analysis.

(ii) For Lecturer in Statistics

Specialisation in any branch Operation Research, sampling Techniques and Design of Experiment.

(iii) For Reader in Life-Sciences

Specialisation in Microbiology/ Genetics.

(iv) For Lecturer in Life-Sciences

Specialisation in any branch of Photobiology, Ecology, Animal Physiology (Invertebrate), Genetics and Microbiology.

(v) For Reader in Physics

Specialisation in any branch of Solid State Physics.

(vi) For Lecturer in Physics

Specialisation in any branch of Solid State Physics, Experimental/Theoretical or Mossbauer Spectroscopy

(vii) For Professor in Chemistry

Specialisation in Theoretical/Analytical Chemistry.

(viii) For Reader in Chemistry

Specialisation in any branch of Organic/Inorganic Chemistry.

(ix) For Lecturer in Chemistry

(a) Two Lecturers—Specialisation in Inorganic/Physical Chemistry preferably with experience in Instrumentation and Chemical Crystallography.

(b) One Lecturer—Specialisation in Organic Chemistry with experience in synthetic work or orgnano-synthetic work of inter-disciplinary nature.

(x) For Reader and Lecturer in Mathematics

Specialisation in any branch of Group Rings, Differential Geometry, Homological Algebra, Algebraic Topology, Functional Analysis, Commutative Rings and partial Differential Equations.

(xi) For Lecturer in Economics

Specialisation in any branch of Econometrics, Advanced Economic Statistics; and Industrial Economics.

(xii) For Professor in Social Studies

Specialisation in the cultural, economic and sociological problems of the tribals with an aptitude and experience of working in the tribal areas of western M.P.

5. The Pay-scales carry with them D.A. and C.P.F. benefits as per University rules. A higher start can be given to deserving candidates.

6. Preference will be given to candidates belonging to Scheduled Castes and Scheduled Tribes if otherwise found suitable. Candidates already in service should apply through proper channel. Candidates who had applied for teaching posts in Life-Sciences and Chemistry in response to advertisement No. Estt./III(9)/76 dated 27/7/76 will have to apply afresh in view of the revised qualifications for these posts. Those who had applied earlier for the post of Lecturer in Economics and Professor of Chemistry in response to our advertisement No. Estt./III(2)/78 dated 6/10/78 and No. Estt./III(10)79 dated 31/7/79 respectively need not apply again but they must intimate to the University on or before **10th March, 1980** whether they wish their application to be considered. They may also intimate any additional qualifications, experience etc. acquired by them.

7. Applications (8 copies) duly filled in and accompanied with attested true copies of certificates and testimonials and crossed Indian Postal Order or Demand Draft of the value of Rs. 10/- for the post of Professor and Reader and Rs. 5/- for the post of Lecturer and payable to the 'Registrar, University of Indore should reach the undersigned on or before **10th March 1980**. Incomplete applications and applications received after the prescribed date, may not be considered.

8. The University reserves the right to alter the number of posts in any cadre or subject and to fill-up or not to fill-up the post and/or to call only selected candidates for interview at their own cost.

S.C. Consul
REGISTRAR

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University
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A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH MARCH 1, 1980

Food Science & Technology
Information
20 MAR 1980
C.F.T.R.I., MYSORE

Professor Tan Yun-Shan being awarded the degree of 'Desikottama' by the Acharya Dr. Umashankar Joshi. Dr. Surajit Chandra Sinha, Upacharya is in the centre.

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

BARODA

Notification No. 8

Applications for the following posts in the Polytechnic are invited in the prescribed forms which will be available upto **10-3-1980** during office hours from 11-30 a.m. to 2-00 p.m. alongwith details of qualifications from the undersigned on pre-payment of Rs 2-00 (Re. 0-50 np. for the members of Scheduled Castes/Scheduled Tribes) by means of Crossed Indian Postal Order payable to the Registrar, M.S. University of Baroda alongwith a self-addressed envelope of 30 Cms. x 12 Cms. for each post.

Polytechnic

1. Principal
2. Reader and Head, Civil Engineering Department.
3. Reader in Chemical Engineering (Petro-Chemicals Department)
4. Lecturers in (1) Civil Engineering (2) Electrical Engineering (four posts) (3) Mechanical Engineering—(two posts) (4) Chemical Engineering and (5) Applied Mathematics.
5. Senior Instructors in Chemical Engineering—two posts.

Scale

Principal: Rs 1600-80-2000 **Reader** : Rs 1100-50-1300-EB-60-1600 **Lecturer** : Rs 700-40-900-EB-40-1100-50-1300. **Senior Instructor** : (i) Rs 650-30-740-35-810-EB-35-880-40-1040 (for Degree Holders) (ii) Rs 550-25-700-EB-25-750-30-900 (for Diploma holders) Plus usual allowances.

Reservation for the posts of **Lecturers** is made as under. No. of posts reserved are mantioned **in brackets**. **1. Scheduled Castes** : 1(1), 3(1), 4(1). **2. Scheduled Tribes** : 2(1), 3(1), 5(1), and **3. Socially and Educationally backward communities including nomedic and denotified tribes :** 2(1).

If no suitable candidates are available from SC/ST/SEBC categories, the posts of Lecturers will be filled up by the other candidates who are found suitable.

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K.A Amin
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UNIVERSITY OF JAMMU

JAMMU

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J.R. Rathore
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Editor : ANJNI KUMAR

Research and Education

—Linkage in the Universities

P. J. Madan*

Before examining in detail the role of research and education and the linkages in the University, it is important that we look at the role of the University and its present status in our society.

We can see the role of the University as a lighthouse for our society which not only reveals the nature of the sea but also identifies danger areas and shows the way.

At one level we are helping the cream of our society in an understanding of the body of knowledge and expertise in their chosen field. If we do this effectively we are not only giving our students technical competence but also a greater understanding of the society in which they are living. Whether their interest is in the physical or social sciences we hope that our graduates will become better members of our society as a result of their education at the University. At this level we may see our graduates as being equipped with the basic skills of their profession and having an understanding of the common problems in that field.

At a second level, the University needs to actively participate in the development of society by providing a forum for both the discussion of already perceived problems as well as for fundamental new thinking. Having given a basic education the University should provide the opportunity for the potential leaders in the field not only to analyse and synthesise the existing problems of society but also to develop and test new hypotheses some of which may have a profound effect on society as a whole. The University needs to be able to provide a home for our great ideas men, many of whom will continue to be in the forefront of their fields throughout their lives.

In order to effectively carry out these roles the University needs to be in a position to respond to the problems of society and to offer new directions of change

We can therefore see education not just as academic preparedness, but as all round development of the individual both as a unique entity and as part of a social milieu. The field of education is the battleground where an effort is made to see clearly the nature of problem, posit alternative solutions, make choices and execute the selected choice.

But how is the University living up to this role and why does it'appear' to have failed ? The University is often criticised for remaining in its ivory tower and for concentrating its efforts on academic exellence for its own sake. To a certain extent this may be true, but it is also often the case that our advanced, high technology industries are to be found close to our better Universities. Here, industry and the University have mutually supporting roles. The industry providing employment for the University graduates and the University carrying out research for the industry.

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However, this relationship can only be maintained if theUniversity has the confidence and respect of the industry and society at large and the University shows itself capable of adapting and responding to the needs of society. It is relatively easy for the University to remain in the forefront of technological advances where the field of operation is clearly defined. In the field of applied social sciences it is much more difficult. Here, society is increasingly demanding an interdisciplinary approach to solve its problems and these often out across traditional academic subject boundaries. Those who have been brought up in more traditional ways of thinking often find it hard to accept the breakdown of formal barriers and tend to adopt defensive attitudes. For example, the problem of housing is no longer seen as a purely architectural problem, but involves the combined efforts of economists, sociologists, lawyers and designers to name but a few.

Our educational activities are meaningless unless they are linked to continuous research, which provides the 'soul' for education. We can see the scope of research in terms of fact finding, stating hypotheses, testing hypotheses and proposing and implementing solutions. As an integral part of our research programme we also need to be involved in follow-up studies so that we can 'learn by doing' as well as identify areas for future research. In addition, we need to be involved in fundamental research into new areas, some of which may involve years of painstaking work, with very little to show in the short term, or some 'literal thinking' involving new ways of approaching old problems.

The long-term research is basically conceptual and has 'growth in time' as an essential ingredient. The application of the research can have both theoretical as well as practical aspects, ranging from fundamental research in nuclear physics, molecular structures to the effects of literacy and caste in our society.

On the other hand there are problems which demand immediate solutions and which cannot wait for complete strategy evolution. We cannot, for example wait to build our first houses until we have a complete solution to the housing problem, but have to act on intermediate solutions which we can develop and 'learn by doing'. This is a continuous and necessary process in every field of human activity whether it is from the physical or social sciences.

In order for the fruits of research to be utilised and the expense justified there needs to be links both within and outside the University. We can see the necessary links in three main ways.

Firstly, the links within a university and research need to be integrated with teaching activities. We cannot expect our graduates to be able to advance the knowledge in their own fields if they are not familiar with the latest developments. The researchers also need feedback and ideas from their colleagues in the same field.

There are also many areas of research which need a multidisciplinary approach. The ideas of one's colleagues in different but related fields can often lead one into new and eventually fruitful areas of research. In the same way that business management is orientating itself towards a problem solving approach, so should the University in both teaching and research have a sharing of experiences and exchange of ideas centred around society's problems and outside the framework of formal University subjects. For example, the development of a rural block may involve economists, statisticians, sociologist, educationalists and geographers as well as physical planners. The problems posed by rural development are not only inter-departmental but also involve inter-faculty cooperation. If the University is to be able to carry out research useful to society and thereby gain society's respect, it must be capable of this inter-disciplinary cooperation.

One of the advantages of the Univesity is that it provides a place for freedom of expression, where the mores of business or industry do not apply and honest but constructive exchange of opinion can take place.

However, for these linkages within the University to be effective we need an enlightened and capable administration. How often do we feel that our Universities run despite the administration and not because of it? And how many of our colleagues are forced to take on the role of administrators and managers instead of using their expertise in teaching and research? The linkages within the University need strong administrative support if highly qualified people are not going to spend their time doing clerical tasks.

The second group of linkages are between Universities. The more specialised the field of research, the greater is the need for inter-University cooperation and exchange. Not only will this reduce duplication of effort and waste of resources but it will also provide intellectual stimulus which is essential for the germination of new ideas. In highly technical fields there could also be a sharing of expensive equipment. We should however avoid the perpetual round of conferences and seminars which have a danger of becoming an end in themselves and often do not give an opportunity for a real exchange of ideas at an intimate and useful level.

Lastly, in many ways, most important of all, there are the linkages between the University and those working in practice. We need to be aware of the problems met by our colleagues in industry, commerce, the professions and government. Often they can suggest areas of research which can have an immediate impact, and if the university responds to this, it can create a tremendous amount of goodwill for itself. The university also needs to monitor the implementation of its research and help take corrective action if necessary.

To summarise, if the University is to make an effective contribution to the development of our country through research and teaching; it must show itself capable of adjusting to meet the challenges of our society, to become, through intra and inter University linkages problem and development oriented and to maintain an ongoing dialogue with institutions and organisations outside the University system.

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Research and Teaching Management in Universities

P. Sivalingam*

Introduction

University, according to a lexicon, inter alia, is an institution of higher learning with power to grant degrees. Teaching—learning is obviously the major activity in a University.

Research is the other major strand of activity with which all universities are necessarily concerned. Research is generally used as a convenient portmanteau term to cover a wide range of activities undertaken by academic staff, such as scholarship, development, consultancy and artistic creation as well as that is usually described as pure and applied research. The nature of the particular research pursued is, of course, determined by the individual academic, according to his interests and expertise, though in some areas, especially the sciences, the direction of research and related matters are discussed by groups of staff. Within each university, one must recognise the distinctive needs, differences and problems between the various disciplines. In the domain of humanities, very often individual academic work would do, often requiring little more than access to some specialist library resources, limited travel funds and occasional secretarial assistance. In the social sciences, however, specialised accommodation and equipment and supporting staff are needed, and the trend is naturally towards group or team-based work. The sciences have long been characterised with research teams often requiring access to expensive facilities and support from full-time research workers. The involvement of the University's administrative machinery is proportional to the staff, facilities and finances involved. This paper purports to deal with some of the management questions that arise the need for proper planning machinery in respect of research, the administrative support offered, and the peculiar problems that surface when new research units are established in a university.

Management of Research

The management of research is a ticklish problem with many dimensions to it. Paucity of financial resources is often a major constraint. The prospect of achieving economies of scale in research is quite bright, with increased sophistication of the sciences and the growth of team-based projects or programmes of research. Such economies are more apparent in research than in teaching at present.

The essential aims to be achieved by the management of a university could be several :

1. the need to provide a proper atmosphere where research can flourish.
2. the need to attract additional grants and resources for research to supplement and complement the existing academic strengths and activities of the University.
3. the need to support the introduction of new patterns of research activities, like interdisciplinary work within the university, cooperative research with sister institutions of higher education or other sectors of the community.
4. the need to make the best possible use of the resources made available to the university for research activities.
5. the desire to establish an institutional policy to develop special links with industry or focus attention on a problem of particular concern in the contemporary world.

Research councils and other donors increasingly adopt the policy of identifying and supporting focal points on which to concentrate their research funding policy, though they are also endeavouring to continue to provide funds in support of individuals. The more the policy of concentration of research funding is adopted, the greater will be the pressure on each individual university to concentrate the allocation of its own resources on the selected areas for, without a corresponding commitment of resources by the university, it is possibie that the grant-awaring bodies will look elsewhere to locate their funds. While universities must continue to provide some research support for all members of their academic staff, they are likely to have to concentrate support in certain areas if the most effective use is to be made of their resources and if they wish to maximise the external resources which they can attract. For every grant secured by a university for pursuit of scientific research, the university itself may have to spend a further sum of its own money in matching support. This entails a considerable loss of freedom on the part of the university, since it is automatically committed there after to that particular expenditure as opposed to any alternative projects. There is, therefore, greater need to be aware of the research implications, and even beware of new research projects.

The University has to be involved in several ways as an intermediary between the research individual or unit and the grant-awaring bodies like trusts, foundations and research councils. The co-existence of research centres and individuals may create an unhealthy competition between them for external finance. The research units have their primary pre-occupation as research and are able to allocate adequate resources to the management of a particular

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Vice-Chancellor, Perarignar Anna University of Technology, Madras.

research project, while the senior academic staff are necessarily involved in teaching and associated administrative duties. No wonder, the former are more successful in the competition. This inevitably raised the complex question of the best forms of organisation for research in universities. With the organisational structures for both teaching and research identical in most universities, separate units are created which by pass, and complicate the main academic structure of the university.

The system of allocating equipment grant assumes significance. Sometimes, each department makes its own application to the funding agencies for equipment, and concentrates its internal efforts on securing priority in the University's building allocation queue. Alternatively, the total allocation of equipment for the university is fixed, and one academic area varies with the others to make an impact and get a lion's share of the overall grant. The creation of a chair in a research area, for example, may have substantial effects on the resources available in other areas. Since it is often difficult to attract a high quality candidate unless he can be assured of an adequate equipment allocation, it will be more and more necessary to establish in advance the basis of allocation between areas. The alternative of securing outside funds to finance the initial purchase of an item of equipment is equally fraught with concern, if the replacement of the equipment is accepted as an ultimate claim on the general equipment fund.

For other reasons, too, the university needs to be concerned about the level and distribution of research effort. The university library, for instance, cannot maintain the same rate of collections in every area of interest for the whole of the academic staff, and its purchases necessarily need to be related to different research strategies.

It is not as though research allocation is the only reason why university management has to be concerned with the research function. The university management plays a considerable part in developing a proper environment in which creative work takes place. The Halsey-Trow study of the British Academic "provides evidence that the differences in research 'climate' between universities have important repurcussions on the level of research activity pursued, and that these differences do not coincide with the historical, geographical and organisational distinctions which characterised the broad groupings of universities which they studied. Research traditions in the individual university and the particular processes of resources allocation shape recruitment patterns and these, in turn, tend to reinforce the relative emphasis given to research. The 'climate' will inevitably be effected by management, for instance by the character, interests and values of a particular Vice-Chancellor and his energy and relative success in mobilising and supporting the initiatives of his academic colleagues and securing additional external funds." It is also largely influenced by the standard of the senior academic staff and their standing, in and contacts with, the outside world, and their ability to attract colleagues of high calibre to work with them. (It is a different matter if they turn out to be empire builders or blackmail empire builders or blackmail the administration with threat to leave.)

The university's policies in respect of the rights and responsibilities of the individual academic deserve consideration. They include :

1. Recruitment (including all categories of research workers)
2. Leave of absence for study and research
3. Financial support for study and research
4. Library provision for research areas
5. Access to and use of equipment, like computers
6. Allocation and use of space, like laboratories
7. Rights of individual and institution, regarding patents, inventions, publications and consultancy.

It may help to have all these policies set out in a booklet and made available to all the concerned. Some of these aspects will be dealt with briefly.

Relevant Research

Research is accepted as falling into one of three fairly well-defined categories, viz. Fundamental Research (also termed Basic Research), Applied Research and Development Research. In a country like ours, where the monetory resources for supporting research is solely restricted, while the demand for it is very high, the need to look closely at the kind of research that we would like to support, cannot be over emphasised. While Basic Research is essential, it is to be identified only with long range results which may not be very appropriate for our country at this point of time. The need then, is in identifying worthwhile projects in the category of Applied or Developmental Research, and it is fortunate that those concerned with the funding of research activities are now very much aware of the needs for these kinds of research. Ideally, all research should aim at satisfying the relevant needs of society in the present national context. Needless to say, a good majority of such research projects would lie in areas dealing with energy and power, both with the conventional and unconventional sources, as well as those with aims to uplift the lot of the rural masses forming the bulk of the country's population. The Universities should, as a policy, accord prioriaty or preferential treatment to such research projects which expect to fulfil the nation's requirements.

Planning for Research

Each university should evolve a suitable planning process for research, which provides the machinery for the anticipation of, and preparation for, research development. The starting point could be the distribution of the university's planning assumptions to all organisational units, which would set the parameters governing the bids for development to be formulated at the different levels of department, faculty and university. Changes in the national policy, reflected by the government's decisions or U.G.C. guidelines and internal university factors governing expansion and limitations of capital are to be taken note of. The university's management information system keeps a record of the factors indicating the level of research activity, like the number of research workers, the amount of research income, the allocation of research fellowships by research councils, the quantity of material published, the academic distinctions awarded, the amount of staff and time spent on research and the like.

Administration of Research Grants

The University Grants Committee in Britain issued in 1970 notes of guidance to universities on the consideration of research projects financed from outside funds. The major point made was that "in each case there should be an assessment by the university of the full economic costs involved, including not only the direct outgoings in respect of additional staff, materials, equipment, travel etc., but also the best available estimates of academic and other staff time devoted to the project, national rent and maintenance costs of accommodation, projected use of computing facilities and other expensive equipment etc. In American universities, it is a common practice for a special office to be established, as part of the general administrative service, to co-ordinate research applications and to assist in the administration of grants on receipts. Staffed by a senior academic or administrator, the office ensures that the budgetary statement accompanying the research submission has taken account of all the likely research implications. This is essential in the American context, where research funding is normally done on a full cost basis, with an approximate amount (just over 50 per cent in 1973) included to cover overhead costs.

Each university must maintain basic information on the range of research activity in progress. A university-wide research document of projects and contracts can be maintained and updated annually to contain all relevant information on the nature of research and the source, conditions and terms of the particular grant. Referring to this stored information, the academics could find out easily and quickly the research interests and activities of their colleagues.

Centres of Research

The research orientation of universities can often be gauged by a study of the research units or centres established, which raises important management questions from an academic, organisational and financial viewpoint. These centres or institutes include the establishment of new fields of study and research, the development of interdisciplinary work, a combination of training, development and consultancy etc. The rational departmental and faculty structure is often tied to a single discipline, and has neither the resources nor sometimes, the interest to engage itself in areas of research which cross the boundaries of other disciplines, other than on an individual basis. When, therefore, funds suddenly become available to support research in areas not previously in existence within the university, the centre or institute provides a ready-made vehicle for the organisation of the staff and resources necessary to carrying it out.

This form of research organistion has several advantages; in that it develops inter-disciplinary and multi-disciplinary research work, brings together staff with common interests working towards a reasonably well-defined objective, provides a 'home' for professionally committed research workers, creates a specialised documentation centre and a ready-made base, so far as administrative and resource overheads are concerned, from which to launch arrange of projects and attract additional funds. This arrangement is now, however, bereft of problems, the major difficulty lying in the heterogeneity of the structure and governance of the different units, especially if the number is large in a university.

Finance is often the biggest problem. While some units have assured sources of finance for years to come, many are almost entirely dependent on their capacity to raise private funds or to make contractual agreements to such an extent as to jeopardise their long-term viability and efficiency. This leads to the university having to decide how much of its own funds it should invest in such units to ensure a permanent base line of funds and planning perspective for them. This, in turn, implies that the university has to consider its own priorities for development. There are also additional problems of scale and obstacles to achieving right balance between a 'core' of permanent staff and a bigger, shifting group of temporary staff.

Administration of Universities

Universities require administration of high calibre, with a wide spread of expertise and of sufficient size to provide an efficient and comprehensive service. The well-being of a university requires a permanent administration to support its wide diversity of activities, with the administration bearing the brunt of responsibility, with important contributions also made by officers and members outside the administration. The main functions of an administration include general (committees, legal affairs. personnel work. official publications), academic (admissions, registration, student, records, student grants and awards, examinations, lecture timetables, ceremonials, scholarships, and prizes), finance (accounts, audit, budgets, salaries and wages fee collections, investments), estates (buildings, maintenance and premises, site development, space allocation, supplies) etc. In a small university, it is possible for the administration to operate as a centralised unit without incurring accusations of remoteness. In a large university, it is desirable and even that certain administrative services should be developed. Of course certain functions do not lend themselves suitable for devolution.

Management Information

University management must be alive to changes, so that it can adopt to, rather than be adapted by changes. For this, the decision-makers need to know how the institution works, its performance, and what changes are occuring at what rates in the several fields of activity both inside and outside the University system. Most universities in advanced countries produce management information of some kind, though all cannot be said to analyse their information needs and then channel the flows to meet these ends. The establishments of Management Information Office is founn to be more effective to process information centrally and openly rather than to handly information many time 'locally' in separate offices.

The theory of management information is often based on the pyramidal concept of data, in which a large base of 'raw' data is aggregated into groups containing more and more 'units of data. The lower layers of aggregation and analysis provide control data and the final layers at the top of the pyramid provide 'management' and planning data. The initial analysis is significant. Modern mechanical tools can, however, overcome many analysis and aggregation problems, since re-sorting and re-analysis is now simple, provided the data is adequately coded.

Automatic data processing techniques can help immensely in university administration. This is not to mean one should plump for such relative innovations as on-line student registration via terminals, television terminals, interrogation facilities to a data bank, the 'total systems' concept and planning models. The time-tried computer provides the answers and is a valuable aid to these taking decisions, as long as its limitations as a quantitative mechanical tool are realized.

Management of Teaching

Being an institution of higher learning, a university must manage effectively its teaching function, probably even better than its research function considered so far. It is acknowledged all over than each individual university teacher is an important decision maker in his own right, as he 'selects' students, designs and develops curricula, determines his teaching style, monitors the academic performance of his own capacity as a teacher, marshals various resources to support his teaching, and so on. The individual teacher is in practice a 'manager', the manager of the teaching-learning process for these students who have been assigned to him. The decentralisation introduced should not, however, dilute the leadership.

Each university attracts a number of research fellows, who are sometimes located within centres or institutes, but more often work with particular academic research groups especially in the sciences. They represent an important asset to the University for, besides strengthening the range of research activities, they prove to be a potentially significant teaching force. Very often the question is asked whether or not they should be required to contribute a minimal amount of teaching to university courses, as part the universitiy's overall policy of staff recruitment. If 'properly, 'supervised' and not critically labelled as cheap labour', both the research workers and the university could benefit from the teaching work-load, as has been the experience in Britain and America.

A Chairman of an academic department of one of America's leading university was observed to make the following remark to a group of graduate students. "Do the best job of teaching you can, but it is my impression that few people have been rewarded for good teaching, and I can't think of anybody who was ever fired for being a poor teacher." This reflects the relative importance or lack of it is placed on the teaching role, but America is currently going through a re-examination of their teaching effort, by better management. It is veering round to the view teaching is a compensation for research.

Teaching Functions and Incentives

The teaching role of an academic embraces a wide range of functions like lecturing, tutoring, seminar leadership; personal and educational counselling of students; marking, assesssing evaluation and examining. All these, very often, are coupled with research, public service and, in many cases, general administrative responsibilities. Broadly speaking, in most of the established universities, each individual is expected to perform all the activities associated with the teaching function as part of his responsibilities a member of as a university.

The allocation of the individual'st ime and effort between these activities is decided in most universities on the basis of equality and, in some, according to seniority. This is a management decision of considerable importance, as the academic staff represent a university's most expensive resource. Though it may not be prudent to assume that every single individual can, or would even wish to, or perform each one of his various responsibilities with equal diligence or efficiency, it has, by and large, worked in most places in most cases. There must, obviously, be incentives to prompt the individual to put in the needed time and effort into the various aspects of his teaching responsibilities.

The next most potent influence may be thefl exibility of the particular university, or appropriate part of it, in allowing the individual to use his total available time effectively. It is true that the heavy teaching load and allied responsibilities break up the individual's potential research time and makes it difficult for him to allocate the necessary chunks of time to it. Universities can get over this problem by creating for teachers comparatively peak and lean periods alternately, with cooperation and agreement with their intermediate colleagues so that, during a light teaching load, the individuals can concentrate more on his research or other functions. This flexible approach depends, naturally, on the willingness of colleagues in a department to smilingly take on additional responsibilities between them so that, over a few years, each may enjoy the benefits to be derived from this kind of arrangement. This is, in essence, an extention of the basis on which leave of absense, also termed sabbatical leave, is granted. Large universities with sound pecuniary position may think of creating additional posts so that additional work load need not pose problems to those teachers in service, when a few of their colleagues are on research assignment or enjoying their sabbatical year.

Balance between Teaching and Research

Teaching and research are two sides of a coin, which is the university. Understandably, the two func-

(*Continued on page 124*)

Coordination Committee for Central Universities

R. P. Puri*

The University Grants Commission in recent years had appointed several committees to look into the structuring of administrative, technical and research staff working in central universities. These committees were to suggest rationalisation of their pay scales, terms and conditions of service and other related matters. Why the need arose to do so? The answer is not far to seek. Things had obviously gone out of control. This led the Commission to think of having some sort of coordination and uniformity for all the central universities.

The rationalisation committee for the administrative staff has however formulated its recommendations and has put forward certain suggestions for making the scales of administrative staff uniform all over. While deadwood uniformity is undesirable yet the universities should not have discretion to go their own way in an unbridled manner. Under the garb of University autonomy, some universities had revised the scales of pay while others instituted schemes which placed the sister organisations in an embarrassing position. These schemes were not in conformity with the standards, rules and procedures laid down by the Central Government and the University Grants Commission. A confrontation between the universities and the Commission naturally developed. If some firm guidelines had been prescribed and enforced with some rigidness such a situation would not have resulted and many posts which had been created beyond the permissible limits of the universities would not have come into existence.

When university employees are entitled to pay and allowances and are subject to those rules which prevail in the Central Government offices, their designations and salaries should also be similar to those of the employees in the Government and the Commission. Any discrimination in this regard seems to be wholly unjustified.

It is time that the Commission takes up the responsibility of organising regularly training programmes for the various categories of university employees through some central agency or at least should make available to universities adequate funds for conducting their own training programmes either individually or collectively with the help of other organisations. In matters relating to discipline, service conditions, the universities should implement faithfully the rules with such modifications as may be necessary. The UGC should set up as early as possible a Cell for framing model rules, regulations and procedures for all such matters for which uniformity is necessary in the central universities. Similarly for the creation of posts some firm arrangement should be worked out in such a way that the financial powers delegated to universities are not exceeded and yet the universities act quickly in response to their needs and urgent requirements. However, the Commission should insist on receiving advance intimation whenever posts are created so that if a university has created more posts other than what is allowed under the approved norms necessary action may be taken well in time.

Under the present financial constraints it is unlikely that the Commission will have sufficient funds for implementing the time scale schemes put forward by different staff associations. In such a situation at least provision should be made for giving incentives for the efficient staff. Apart from the normal promotions chances the administrative staff should be able to show their worth. For example typists and stenographers could be allowed merit increments if they acquired sufficiently high speed other than what is prescribed. Special increments thus granted should not however be on a permanent footing but be limited, say, to two or three years. Their retention beyond this period should be contingent on their maintaining the same or greater efficiency. Similarly provisions should also be made for other categories of staff. In this way the merit and hard work as a result of acquiring proficiency and efficiency may be rewarded.

The associations of employees in the universities have put forward all sorts of demands from time to time. When certain demands are not met by the authorities, agitation follows. If one university accepts certain demands under pressure, the employees of other institutions start pressurising their own authorities to accept similar demands quoting decision of that university as a precedent. This results in endless bickering and heart-burning. These demands may be categorised as individual or general. The demands affecting the employees as a whole may be discussed in a common forum and their solutions be sought in consultation with the UGC, if necessary. In doing so, contradictions and conflicting decisions could be avoided. To begin with each university may notify at the beginning of the year consolidated charter of demands from their recognised staff associations. These demands may be discussed at informal meetings of the Vice-Chancellors of central universities and those demands which are genuine and reasonable can be met within the prescribed framework of the UGC. Joint meetings and discussions may also be held with the Commission. This procedure may minimise the increase in agitation considerably and many ugly situations can be avoided and many man hours may be thus saved. ☐

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CONVOCATIONS

Civilisation on Trial

In the current scene we see the march of modern civilisation with its over-powering mass production, with local events assuming overbearing global proportions, all weighing down on humanity with a stifling pressure, displacing the old stability by new complexities leading to continued tensions and insecurity. This results in making men and women disproportionately preoccupied with the future as an inevitable urge towards escapism. There is an irresistible attraction to everything new with less concern for existing basic values, for the new symbolises a flight towards the future. While science may open up a fourth dimensional sphere, the individual in such a world gets compressed into a single dimension as it were tied to the endless monotony of the assembly line production pattern. The promise of compensation therefore seems to lie in conjuring up the future.

The aim of education has been accepted as the unfolding of the inner personality of the individual to make for a fuller life. This flowering of the human personality is fiercely threatened today by a world which is getting more and more geared to predominantly physical targets that can only be achieved through very complicated mechanical processes, reducing the role of man more and more to a maintainer of machines, working rapidly to the elimination of man. Even the function of the brain is being transferred to the machine.

The thinkers of the world today feel that civilisation is on trial and the finger of fate points towards education to find the solution for the new challenges and the inevitable tribulations.

Education is accepted as the fostering of growth for it is the aid provided towards adjustment of our subjective self to the objective world. The success of this process naturally depends on the richness of the personality who is fostered. Education therefore has naturally to aim at the development of the uniqueness or individuality of the person that will enrich the community. The objective of man is quality in life which makes life worth living. For this the foundation is "quality in man" himself. It is the paucity of this element of quality which creates crises of confidence and undermines social foundations.

The process of education therefore consists of animation of the mind, independent thinking, evolving other options and alternatives to existing patterns and styles. Unfortunately society does not encourage fruition of such stimulation or originality in action for it savours of instability and risk. Yet it is essential that education be analytical and dialectic, to lead to a liberation from old meshes which over a period become blind taboos, almost superstitions. As this task of dethroning may not always be selective, there is usually apprehension of radical social and political changes. On the other hand we have to remind ourselves at this stage with strong emphasis, that education has to be a reference point, an activation, a continuous stmuilation, to probe and analyse, for which an educator himself has to be a prospector.

India's past has never been an uninterrupted timeless continuity like the movement of water in a bowl. For the past is strewn by challenge by a thinker or group of thinkers and tradition has never been static. It has been dynamic and relevant to the passing periods.

It is in this context that the sharpening of the aesthetic ability and the creative elements in it, becomes essential and important in our present system of education. This element is haphazardly treated or casually ignored. A growing dissatisfaction over the years over the sad plight of education led to expriments by social thinkers, not necessarily educatonists. One such personality was Gurudev Tagore, who became a crusader against an unimaginative hide-bound system and tried to show a positive side through the creation of his own institution and his own system. It aimed at aesthetics as something more than just teaching art-forms like painting, dancing, music or sculpture. The objective was cultivation and refining of the sensitivity to build up an integrated persoality whose senses are brought into harmonious relationship with the outer world. Aesthetics is the end result of something well done, therefore education has to aim at creation of artists, (an expression in the broadest sense), that is, those whose imagination and creative talent are stimulated to contribute something unique and original, at the same time efficient and sincere in expression, to ultimately make for a society of artistic significance, something that has balance, harmony and therefore, beauty and above all, purpose.

Intellectual education has to run parallel to manual, that is, students have to get acquainted with the elements of form, colour, and the laws to which they are subject. This opens the way for the creative genius of the individual as well as establish a basis on which several different individuals can cooperate without losing their artistic independence. This collective work is essential and possible when every individual is prepared by proper training to be made capable of understanding the relationship of the single to the whole and is thus the mean to harmoniously coordinate independent activity with the total group work. There is a subtle rhythm in this relationship arising out of the delight in shaping and deiigning, which transmutes itself to the entire community. This is what gives from to the random, order to the unorganised.

Such experience hand-work offers. The sensitive artist exploring material and creating forms is as necessary to civilisation as the scientist and the technician. It is this foundation and experience which trains citizens to become useful members of society and to build up a citizenship that can operate a fruitful and beneficial administration for a nation and a country.

It is the element of aesthetics in every walk of life that brings joy and illumination to the mind. The growing youth learns through the adventure of fashioning by the hands with grace and elegance, balance. Such operations have significant opportunities is adolescence, the period between childhood and adulthood, covering the range from dependence to independence, from the self-centered teenage to the maturing adulthood. Old cultures marked this period by giving more responsibility to the young and a more definite part of play in the life of the community. Present education prolongs a student life with no independent activity, particularly of a creative and productive character, as would make a valuable contribution to the society.

The creation of Sriniketan as an integral part of the education complex is a clear example of this realisation. Education has to provide an atmosphere where the student can pass naturally through creative work to the acquisition of knowledge so that the two can interact and vivify each other. Here a distinction has to be made between knowledge as values and as information. There is the knowledge of the self and knowledge of things, the essence and the phenomena. In India, our ancients while not minimising the importance of the latter laid equal emphasis on the former. It was the integration of the two that was to lead to the blossoming of the full personality. Tragically the concept of personality is today tending to become a cult. Papers and journals carry hints as to how to build up the personality through the proper cut of clothes, right colour of the complexion and odour of the perfume used. This, we realise in our maturity, has more of exhibitionism than the evolution of a real personality.

Another lacuna in the educational field is the absense of close intimacy binding the teacher and the pupil. Obviously the preceptors often fail to be the great source of knowledge which they were expected to impart and interpret. Above all, the students no more share the life of the teacher. This accounts for some of the current tension between the two and between the school and the home.

The teacher is expected to teach as much through his own personal conduct as an individual or as a family man and as a public citizen as through academic knowledge, an important factor which got moulded into the makeup of the students and the shaping of their personalities. These ideas have been voiced in our midst by teachers like Tagore and Gandhi, who said: 'My life is my message'. In such a setting, the teacher enjoys a dignified social status and is not a mere servant of an institution. The sense of fulfilment came from the teacher-pupil partnership in new adventures, new experiences and voyages into new realms, vigorously debating or even controverting, all adding up to rich experiences. Here one learnt the task of seeking and finding satisfaction through the exercise of tolerance and compassion which were essential elements in these exercises.

Today these qualities have assumed crucial importance for they are the very bedrock of our future if we are to survive as civilised beings. Genuine respect for the human being, and faith in the intrinsic good in humanity is the foundation of social cohesion. All intellectual history paints battles of the intellect, that stimulated and enriched life instead of degenerating into fanatical emotions. Our country is an astounding record of a variety of cultures existing side by side. Cultural vitality manifested itself through manifold creative arts which have their being in this rich living. Ours has always been an inclusive culture absorbing and assimilating with a reasonable niche for every distinctive identity.

Anthropologists record increasing evidence of the destructive results of aculturation where people are robbed of a faith and involvement in their own culture. For culture is more than a mere expression; it is a vibrant pattern of living.

The cultivation of our aesthetic facilities, refining of our sensitivities, deepening of our consciousness and our relationship to the world around is neglected in the present overpowering fascination for technology. There is a tendency of its being accepted as an end in itself and the corrosion of the basic human values by continuous super-imposition of the cold scientific knowledge under the guise of providing certainties and facts and with measure of progress and power.

[Excerpts from the convocation address delivered by Kamaladevi Chattopadhyay at the Visva-Bharati, Santiniketan.]

Complaints about the non-receipt of the Journal are entertained within one month of the date of the particular issue.

Khairagarh Varsity honours three top artists

At its seventh convocation held at Khairagarh, on the 9th February, 1980, the Indira Kala Sangit University, Khairagarh (MP) has honoured three top artists of the country, two of whom are from South and all of whom are international figures, by conferring the D.Litt. Honoris Causa. The recipients are Smt. Rukmini Devi Arundale, Smt. M.S. Subbulakshmi and Ku. Lata Mangeshkar. Smt. Subbulakshmi was unable to be present at the convocation and, therefore, she was awarded in absentia.

Accepting and acknowledging the honour done to her, Smt. Arundale said that while culture is the soul of the country, music is the heart of culture. She expressed her satisfaction that this University is devoted to music and is not like the rest of the Universities to teach traditional subjects. She said that Music by itself is a *Creative Art* and, therefore, every great musician is a creator. She reminded the students that the Diploma is but only '*Anugrah Patra*' which she considers is the qualification for learning, from where the students really begin their learning.

Ku. Lata Mangeshkar at the Khairagarh Convocation

Lata Mangeshkar thanked the university and expressed her very high hopes that the Indira Kala Sangit University which is fully devoted to Music would grow from a small poppy to the sky high limit. She then beautifully expressed her feeling about the university's future in a small song of Sant Gnaneshwar, without any instrument. The small song was so befitting to the occasion and so nicely connected with her hopes that the spectators, packed to the fullest capacity of the Pandal which could accommodate more than 6000 persons were all spell bound.

Ku. Mangeshkar, referring to the unknown depth of the Indian Classical Music, mentioned what George Harison had told her when she had asked him as to the difference that he finds between the Western Music and the Indian Classical Music. She said that George Harison, who had already learned Indian Classical Music replied that to understand Indian Classical Music, one has to take several births. She ended her small speech by calling upon the teachers and students to contribute their best to develop this only University of Music of the country.

The convocation address was delivered by the Higher Education Minister of Madhya Pradesh Smt. Savita Bajpai who, while mentioning the various good work that the University has done, hoped that it will maintain its tempo of progress and achieve its objectives soon. The Convocation was presided over by Dr. A.K. Sen, Vice-Chancellor.

Educated unemployment

There have been several committees and commissions and most persons have talked of job oriented education. But the number of educated unemployed continues to grow unabated. This is a problem for which your University alone cannot find a solution, The Government, educationists and our youngmen will all have to join in finding a solution. Many changes will have to be made in the socio-political structure for every able-bodied man in this country to be fully employed.

As our socio-economic problems are tending to become more complex, the problem of educated unemployed youngmen has to be solved at a very early date. Any further delay will be at the nation's risk. It is said that India suffers from three kinds of unemployment—(1) Unemloyment (2) Under-employment and (3) Problem of unemployables. The problems of unemployment and under-employment are largely resultant of our economic structure, the dynamics of our economy and the shape we give it. These problems arise owing to the distortions in our economic planning for which our planners are engaged in finding solutions.

Savings, appropriate investment and corresponding production have an impact on the growth of a nation's economy which in turn should result in successive rounds of employment generation. But what is really important is the aptitude of our people to absorb the latest and best in technology. Its absorption is feasible only when the technology is in keeping with the general level of knowledge and skills of the people. Many a time it is felt that advanced though we are in the industrial fields, the fact remains that our large investments have not created the desired income and employment opportunities. It would not be out of place to mention that our planners talked of a public sector occupying the commanding heights of the economy and showing the way for self-sustained development. But somehow our great hopes have not found fruition, with the result that while we have set up large industries and rank among the ten most industrialised nations of the world, the fact cannot be denied that the lowest five deciles of our population are probably the poorest in the world despite the passage of three decades of independence. The problems of unemployment and under-employment can only be tackled when our investments have a direct impact on the people living below the poverty line, instead of allowing a few large investments merely to dominate the economic scene without affecting the lives of the rural poor. But the economists, politicians and other leaders in India are busy giving second thought to all our development programmes and I think their success will be measured by the manner in which they are able to solve the problems of unemployment and under-employment in a measurable period.

The third problem of unemployables is still more difficult to solve because even as we step up economic activity and there is expanding growth all around, there are people who would like to have only one kind of work; that is desk work and no other work. They are not prepared to undertake any manual work. The British system of education has been responsible for this. That is why psychologically our youngmen are attuned to desk work rather than any kind of manual work whatsover. The great leader of this country, Mahatma Gandhi emphasised the dignity of manual labour, and his basic educational concept was founded on the principle that one can be trained better if one's education is related to some kind of manual work. People sometimes pay lip-service to basic education no doubt, but it does not seem to have gathered momentum in this country. Does the fault lie with the concept or with the manner in which we have executed our education policy? Our method of education has been faulty. Centuries of poverty and the process of history have resulted in the creation of cheap human labour so that any middle class person in the last five or ten decades could be employed in white collared jobs, This allergy for manual work which has been inherited for the past five or ten decades has to be fought and everyone howsoever highly educated he may be, must, as Gandhiji said, do some kind of manual work religiously.

[Excerpts from the Convocation Address delivered by Shri T.N. Singh, Governor of West Bengal at the Berhampur University].

Prof. Chandra pleads for raising standard in colleges

Prof. Satish Chandra, Chairman, University Grants Commission while addressing the convocation of Agra University said that the State Government should use their funds to raise the standards of old well-established colleges than on setting up new universities. Some of these colleges could well be developed into autonomous colleges to raise the level of excellence in higher education but he regretted that many state governments were not paying enough attention to the standards of teaching and research in the postgraduate colleges. On the contrary recognition to these colleges was often given without ensuring whether they possessed the necessary infrastructure.

The University Grants Commission has circulated certain guidelines to the universities for raising the standards of teaching and research in postgraduate colleges. Visiting committees were also sent to these colleges which fulfilled the guidelines or were likely to do so. The funds earmarked for higher education were inadequate and drastically pruned in the Sixth Plan as compared to the Fifth Plan. He said although the size of the draft Sixth Plan was three-and-a-half times that of the Fifth Plan, the total allocation had not increased. In fact, as far as the central sector represented by the UGC was concerned it had declined by 30 per cent.

Prof. Satish Chandra hoped that if the university and college teachers and students played their due role and tried to win the confidence and support of the community, the Government and the Planning Commission might be persuaded to change their stand over funds for higher education.

Royal College of Physicians of London
and
Royal College of Surgeons of England
Sir Ratanji Dalal Research Scholarship
in Tropical Surgery

Applications are invited for a full-time or part-time scholarship for research in Tropical Surgery, tenable in Britain or overseas. Candidates must be medical practitioners registered in the Commonwealth.

The total value of the Scholarship will not exceed £5,500, including any allowance for research expenses. Tenure will be for one year in the first instance, commencing not later than 1st September 1980 and renewable for two further years.

Further details, including the method of application, may be obtained from the Assistant Secretary, Royal College of Surgeons of England, 35/43 Lincoln's Inn Fields, London WC2A 3PN, by whom applications must be received not later than **31st May 1980**.

CAMPUS NEWS

Workshop on Public Administration

Prof M. Santappa, Vice-Chancellor, Sri Venkateswara University, Tirupati, while presiding over the inaugural function of the Workshop on Public Administration in South Indian Universities made a passionate plea for the creation of separate and independent departments of Public Administration with inter-disciplinary approach. The conference was held under the joint auspices of the Department of Political Science and Public Administration of the university and the Southern Regional Centre of the Indian Council of Social Science Research.

In view of the growing complexities of contemporary administration at all levels—local, state, national and international—Prof. Santappa stressed the need for the study of the subject more scientifically than ever before, taking full advantage of the latest research findings in the fields of psychology, sociology and philosophy. The Vice-Chancellor wanted the participants to focus on the three crises, namely, identity crises, confidence crises and credibility crises, to which public administration was currently exposed.

Prof. K.B.Y. Thotappa of Mysore University, who delivered the inaugural address, referred to the new frontiers of public administration witnessed in recent times like the impact of behaviouralism and multi-disciplinary influence. He regretted that not much research was done in India in the emperical sphere. He further remarked that while the organisation and working of the Departments of the Central Government was examined to some extent, little or no attention was paid to a detailed and comprehensive study of the Departments of the State Governments.

Prof. C.A. Perumal of Madras University and General Secretary of the Indian Political Science Association, dealt with the Wilsonian and Willoughby politics-administration dichotomy. He wondered whether it was not time to ponder seriously over the ecological factors involved in the operation of the administrative systems. Prof. Perumal made out a strong case for the study of a new discipline called "Public Management", in the light of the inadequacies found in both Public Administration and Business Management. According to him, bureaucracy continued to offer a rich and fertile field for research in public administration.

In his welcome address, Prof. K. Kamalanathan, Head of the Department of Political Science and Public Administration, pointed out that the Workshop was a unique one and first of its kind organised so far on teaching and research in Public Administration in South India. He paid glowing tributes to Prof. Santappa, Vice-Chancellor, for promoting the interests of social sciences in general and Public Administration in particular. Prof Kamalanathan revealed that besides a specialised post-graduate course in personnel management at the S.V. University Post-Graduate Extension Centre, Cuddapah, many serious students were working on a variety of problem ranging from age-old topics like Municipal and Revenue Administration to modern ones like Consumer Protection and Hospital and Health Administration. A special and distinguished feature of the S.V. University was that provision was made for the admission of senior officers with field experience to the Ph. D. programme. He disclosed that the Vice-Chancellor expressed his readiness to liberalise the research admission rules so that society could benefit by healthy interaction between the academics and the administrators.

Mr. P. Satyanarayana, Deputy Director, Southern Regional Centre, I.C.S.S.R., traced the history of Public Administration as an academic discipline in the Indian Universities and explained the objectives of the Workshop. He observed that the required academic base was establishad, with vast data available for research. He appealed to the participants to discuss how the great challenges posed by both other social sciences and professional disciplines could be met by Public Administration.

Saurashtra University

A 27 member College Development Council including the Deans of Faculties of Arts, Science and Commerce, 5 Principals of affiliated colleges, some teachers of the University Departments, 5 teachers of the affiliated colleges, the representatives of managing bodies—trustees of colleges, a few eminent persons nominated by the Vice-Chancellor, a representative of the State Government and the Academic Officer of the University etc, has been constituted in July, 1979 by the Saurashtra University.

The Syndicate of the University has also passed an Ordinance regarding the formation and functions of the College Development Council embodying therein the guidelines set out by the UGC for the working of the College Development Council and Shri J.M. Mehta has been appointed as the Director of the College Development Council.

Prof. D.N. Pathak, Vice-Chancellor presided at the first meeting of the College Development Council which was held in September, 1979 at which the following important decisions were taken:

1. Pending the receipt of the pattern of assistance to colleges by the UGC during the 6th Plan, the colleges be asked to formulate their plans for development on the basis of priority so that no time will be wasted in preparing and finalising their development proposals when the guidelines for assistance are received from the UGC.
2. The Syndicate was requested to consider the possibilities of granting long term or permanent affiliation to colleges which have been in existance for more than last ten years.
3. The Academic Council and the Boards of Studies were requested to restructure their first degree courses in such a way as to give some flexibility to colleges in their teaching programme.
4. Contact between the teachers working in the University Departments and the teachers in the affiliated colleges be established by arranging Seminars, Workshops or talks and/or lectures at the colleges so that the standard of teaching and research in different subjects can be raised and also help in making up to-date the existing syllabus in the subject.
5. The possibilities for making the Library facilities available to the teachers on Sundays and holidays may also be explored.
6. A meeting of the Principals of the colleges be convened by the Vice-Chancellor after the guidelines for the assistance during the Sixth Plan is received and the need for taking the full advantage thereof be explained to them.
7. The Director may in the meanwhile collect necessary information and data regarding the physical facilities available at each college faculty-wise enrolment in each college, the results of the Higher Secondary Examination held by the State, etc. to help the Council in formulating an integrated districtwise plan for development of affiliated colleges.

Socially relevant higher legal education

The Postgraduate Department of Law in Sri Venkateswara University, Tirupati, is one of the first in the country to introduce the subjects of research Methodology and Law and Social Change with special reference to India following the latest recommendations of the UGC in 1976. Dissertation and viva-voce form part of the M.L. Degree Course. Subjects dealing with law and Social Change relating to real societal problems are given for dissertation for M.L. students, viz. law, prohibition of alcoholic drinks and society; untouchability, constitution law and society, antidowry law and society; bail, poverty law and equality; censor laws, freedom of expression and society; prevention of concentration of wealth, constitution and society; women law and society: socialism and the constitution; child, law and society etc. The department is also one of the first in the country to establish a Free Legal Aid Clinic in 1976 and also to start Legal Literacy Programme in 1977. A sizeable number of people from nearby villages received Free Legal advice. So far three brochures in Telugu on bonded labour, Abolition of untouchability and Women's Rights have been published. The printed brochures are freely distributed to the villagers. The department has plans to publish brochures on (1) Judicial System (2) Equality and the Indian Constitution (3) Dowry, Law and Sociality (4) Socialism and the Indian Constitution (5) Prohibition (6) Law and Economic Justice.

Field based programmes have been launched for the promotion of legal consciousness, especially among the rural communities by arranging brief discourses by teachers and students on the significant dimensions of the elemental aspects of different important laws such as, Marriage, Succession, Transfer of Property, Contracts, Safeguards against encroachment on personal liberty, Economic justice, equality, Directive principles of State Policy and Fundamental duties.

Marathwada hums with academic activities

Marathwada University organised an impressive seminar on problems of higher education in Marathwada from February 16 to 18, 1980. Prof. S. Varde, former Education Minister of Maharashtra, inaugurated the seminar. Several senior academics including the Vice-Chancellor of the university, Dr. B.R. Bhonsle, participated in the discussions. During the discussions several points were made regarding the problems concerning the development of higher education in this region. The seminar suggested guidelines for restructuring the system.

The Marathwada University is also having plans for building a museum to house the precious collection of sculptures, curious, miniature painting and historical documents. The project is estimated to cost about Rs. 45 lakhs and would be funded by the University Grants Commission. The museum, first of its kind in the region will be an added attraction to the already rich ancient rock-cut caves and monuments of this region.

The Department of History and Ancient Indian Culture has seriously taken up the work of preparing a comprehensive catalogue of the existing historical inventory and has received a grant of Rs. 1,23,500 from the Department of Culture, Ministry of Education, Government of India, for publishing the definitive catalogue. The Department of Foreign Languages would be holding a seminar on problems and perspectives of foreign language teaching in India from March 26 to 28, 1980. Similarly, the Department of Zoology is also planning an All India Symposium on Crustacean Endocrinology from 27th March to 28th March under the sponsorship of UGC Centre for special assistance programme. Prof. K.G. Adiyodi of Calicut University is expected to deliver the keynote address. A large number of distinguished

Endocrinologists are expected to participate in the symposium from all parts of the country.

SNDT goes ahead with Open University

The SNDT University has prescribed an entrance test for those who want to avail the open university degree courses. For the entrance test held in August last, as many as 800 women students appeared, 92 per cent of them getting through and qualifying for the correspondence courses that would enable them to appear for the first year of the three year degree courses in Arts and Commerce.

The educational curriculum for these courses have been especially designed for the needs of the students individually and in so far as it could be job-oriented and useful for the community. Principal Dr. H.V. Inamdar of the SNDT College, Dr. Vinaybala Mehta, Principal of the College of Education and Principal F.Z. Tarapore of the Home Science College and Mr. I.N. Kaxi, Coordinator of the programme have been working hard to improve these programmes. The learning material is carefully prepared so as to give the candidate a good idea of the studies. Practicals would be suitably arranged for them at several centres all over the countries wherever there would be need for them. As formal education continues to be in such a great demand from women all over the country that unsolicited and unadvertised 600 applications have again been received for the next year course. 80 per cent of the candidates coming for the course were married women and again 60 per cent among them were SSCE passed. The age for candidates appeared to be from 21 to 71 years and most of them were mothers and daughters.

Thapar asks historian to be objective

Dr. Romila Thapar, Professor of Ancient Indian History at the Jawaharlal Nehru University, New Delhi, in her inaugural address at the Institute of Cultural Dynamics said that the subjective element and the bias of the writer in the interpretation of history creeped into the writing of history but the historian should try to eliminate this tendency to the maximum extent possible. The historians do not claim any perception of the absolute truth but place before the people the situation at a given point of time. She scanned through the trends in Indian History covering various phases of interpretation from the British Colonial nationalist, communal and Marxist point of view. She showed how these trends developed with the change in the attitudes of historians and their times. For instance, from 1920 onwards the nationalist trends in writing started emerging and from 1930-40 a communal bias in historical writing was noticed. The dogmatic and mechanical application of Marxist theory in recent times presented distorted historical interpretations whereas its analytical approach has yielded better results. She stressed the need for a multi-disciplinary approach to history which included the study of anthropology, economics and other social sciences.

Roorkee harnesses sunpower

For the first time in the country Roorkee University has harnessed sunlight for generation storage and supply of electrical energy. Dr. C.M. Singh, Reader in the Department of Physics and Project Investigator of the University's Energy Centre has set up two parallel screens atop the administrative buildings. The screens are fitted with a sun-sensing electronic device to tract the direction of the sun as it moves from east to west or declines seasonally north or south in relation to the earth. The front screen is fitted with a panel of lenses which concentrates sunlight and makes it 75 times more intense. The concentrated light is focussed on a number of silicon solar cells fitted in a series combination on the back screen. Each cell generates through this arrangement a short-circuit current of six amperes and an open circuit of 0.7 volts d.c. Surplus heat is dissipated in the air.

Primatology centre facing crisis

The research centre in primate behaviour and behavioural pharmacology at Meerut University is facing serious internal problems which may lead to its closure. The centre, the only institute of its kind, was developed by Dr. S.D. Singh, National Professor of Psychology with monetary help of the University Grants Commission and the Indian Council of Social Science Research. After his death the centre has suffered a set back and the centre has not been able to progress further.

On the visit of the Council Members of the Association of Commonwealth Universities to India from January 20 to February 5, 1980, AIU organised following discussions groups at various centres :

1. **Research and Teaching in Universities (Bombay)**
2. **Management of Research in Universities (Trivandrum)**
3. **State support for science research in universities (Calcutta)**
4. **Universities in a steady state situation and the problems arising therefrom (Calcutta)**
5. **University Research and National Development (New Delhi)**
6. **Cooperation between universities in 'Developed' countries and those in 'Developing' countries in the conduct of development oriented research (New Delhi).**

The keynote addresses have already been published in the last issue. Some of the papers presented at these discussion meetings are reproduced in this issue.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Pratap, D. Rabinandan. Anthropology in action in the tribal areas of Adilabad District, Andhra Pradesh: A study in changing plan strategies. University of Calcutta.

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Research and Teaching Management

(*Continued from page 112*)

tions produce divided loyalities among staff and even students. This is noticed at two levels; by the individual academic who feels quite sharply the competing claims on his time and energy, and at the institutional level where alternative policies can be designed to emphasize one function rather than other, especially by decisions on the allocation of resources. Both the individual and the institution are therefore faced with a problem of choice. The decisions taken in both respects are the concern of management.

This question of choice need not, however, be resolved by the exclusively concentration on one task rather than the other. It is much more a question of balance. If a university is to realize its fundamental aims, the pursuit of these two complementary functions is essential. The individual academic generally feels this dual commitment to be the most attractive aspect of an academic post.

External pressures will undoubtedly be exerted on universities to ascertain and reveal the balance of resources allocated to each function. The universities have not recognised the need to make this distinction for their own nternal management purposes. The present methods of categorising expenditure in universities make it difficult, probably impossible, to distinguish between spending on teaching and spending on research. ☐

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Sl. No. 9: Political Sociology.

Sl. No. 10: **For first Post**: Population Ecology/Cell Biology.

Sl. No. 11: **Desirable** : Specialized in any one of the modern fields of Organic Chemistry with sound knowledge of Spectroscope techniques.

Sl. No. 12: Instructional Technology.

Sl. No. 15: Social Cultural Anthropology.

Sl. No. 17: Economic Geography/Quantitative Geography.

Sl. No. 21: Algebra/Statistics.

Sl. No. 25: **For first post** : Lower Plants.

Sl. No. 26: **Desirable** : Specialised in any one of the modern fields of In-organic Chemistry with sound knowledge of Spectroscope techniques.

Candidates appointed should be prepared to serve anywhere within the jurisdiction of the North-Eastern Hill University.

Applications in plain paper indicating name, present address, age, qualification in details, etc., etc., should reach the undersigned on or before **12th March, 1980** together with an Indian Postal Order for Rs. 5/- (Rs. 2.50 in case of Scheduled Tribe/Scheduled Castes candidates) payable to the "North-Eastern Hill University", Shillong as application fee.

NOTE

1. Persons in service should submit their applications through their employers.
2. Candidates called for interview will have to appear before the Selection Committee at the Office of the North-Eastern Hill University or at any place specified. A return first class railway fare for the post of serial number 1 to 7 and second class railway fare to the rest of the posts shall be paid by the University from the place of start to place of interview and back. (The rate of travel allowances permitted by the Central Universities will apply.)
3. All appointments will be subject to a period of probation.
4. These posts are open to all citizens of India who satisfy the required qualifications but some preference may be given to equally qualified ST/SC candidates.
5. The University reserves the right to make appointments under statute 21 of Act, if necessary.

R. Kharlukhi
REGISTRAR

UTKAL UNIVERSITY
BHUBANESWAR

Advertisement No. Estt-I/886-C/4068/80
Dated 26-2-80

Wanted one Lecturer in Chemistry (Regular), One Lecturer in Botany (Regular), One Lecturer in Sociology (Regular), Two Lecturers in Geography (Adhoc), One Part-time Lecturer in Taxation Law (Regular) and One Part-time Lecturer in Taxation Law (Adhoc) in the respective P.G. Departments and Bhubaneswar Law College of the Utkal University in the U.G.C. scales of pay, possessing the U.G.C. and University prescribed qualifications. Last date for receipt of applications is the **25th March, 1980** for regular posts and is **10th March, 1980** for adhoc posts.

Specializations

Chemistry

Physical Chemistry or Physical and Nuclear Chemistry.

Botany

Microbiology or Ecology or Plant Bio-chemistry or Cell biology.

Sociology

Sociology of Planned change and Communication.

Geography

(i) Regional Planning preferably with a degree/diploma in Regional Planning from a recognized University/Institution. (1st post)

(ii) Town and Country Planning. Knowledge in Cartography and Aerial Photo-interpretation. (2nd post)

Taxation Law

Diploma in Taxation Law or having specialization in Taxation Law. Preference for having practice in Taxation Law.

Prescribed application forms in seven copies for regular posts and three copies for adhoc posts and other details for the various posts can be had from the Registrar of the University in person on payment of Rs. 7.49 paise and Rs. 3.21 paise or by post on receipt of a crossed Indian Postal Order for Rs. 9/- and Rs. 4.71 paise respectively for regular and adhoc posts payable to the Registrar, Utkal University, Vani Vihar, Bhubaneswar-4.

REGISTRAR

PUNJABI UNIVERSITY
PATIALA

Advertisement No. 8/SPS/PRO/ Estt./UN/80

Applications are invited for the following posts:

1. **(i) Lecturers in Law**
   (ii) Lecturers in Religious Studies (Christianity)
   (Grade Rs. 700-40-1100-50-1600)

Note

a) The above posts will be filled as per qualifications prescribed by the U.G.C, details of which would be supplied alongwith the application form.

b) Only those candidates who fulfil the prescribed qualifications need apply.

c) Additional qualifications / Specializations required are as under:-

Lecturer in Christian Studies

Prescribed qualifications shall be in the subject of Philosophy/Comparative Religion / Theology / Church History.

2. **Research Assistant in Chemistry**
   (Grade Rs. 550-20-650-25-750)
   At least 2nd class Master's degree (Chemistry) with atleast 55% marks and also with a minimum of three years research experience. Preference would be given to candidates having experience of handling air and moisture sensitive materials and working with vacuum and low temperature techniques.

3. **Research Scholars**
   One each in Math. & Statistics and three in Astronomy & Space Sciences (Tenable for two years in the first instance @Rs. 400/- p.m. all inclusive).

Qualifications

Candidates should possess at least second class Master's degree with at least one year teaching/research experience after obtaining Master's degree provided that the condition of experience may be relaxed in the case of first class M.A.'s/M.Sc.'s provided further that a candidate with at least 55% marks both in B.A./B.Sc. and M.A./M.Sc. could also be considered in case no first class M.A./M.Sc. is available.

Specializations

Mathematics

(i) Elasticity, (ii) Conformal mapping and Univalent functions, (iii) Special functions; and (iv) General Topology.

Statistics

(i) Sampling theory and (ii) Design Theory (iii) Inference.

Astronomy & Space Sciences

Master's degree in the subject of Astronomy/Physics/Mathematics; and (b) Diploma holder in Space Sciences/ M.Phil in one of the above subjects will be preferred.

General

Higher start within the grade admissible depending upon the ability and experience of the candidate. House rent and Dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respects on the prescribed form accompanied by a crossed postal order worth Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala should reach the University by **20.3.80.** The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size of 25x10 cms. stamped with 30 paise postage which should be superscribed at the TOP in BOLD letter **"Request for Application Form for the Post of———.**

Persons already in service should apply through proper channels. Government servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by **22-3-80.**

REGISTRAR

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I, Anjni Kumar, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-
Publisher

SAMBALPUR UNIVERSITY
JYOTI VIHAR: BURLA

Advertisement No. 1983/Estt. II
Dated the 7-2-80

Applications in the prescribed forms are invited for the following teaching posts in the University Post-Graduate Departments at Jyoti Vihar, Burla.

1. Professor : Economics—One post
2. Reader : Political Science—One Post
3. Lecturer :

English—One Post
Chemistry—One Post } Leave Vacancy

II. **Scales of Pay**

Professor—Rs. 1500-60-1800-100-2000-125/2-2500/-
Reader —Rs. 1200-50-1300-60-1900/-
Lecturer —Rs. 700-40-1100-50-1600/-

III. All the posts carry usual dearness allowance and C.P.F.-cum-gratuity benefits as would be determined by the University from time to time.

IV. The age of retirement is sixty years.

V. Qualifications

LECTURER

(i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent foreign Degree with grade B+ or 55% of marks.

(ii) A Doctorate Degree or Published work of equally high standard. In case a suitable candidate possessing a Doctorate Degree or equivalent published work is not available, a person possessing a consistently good academic record (due weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed on the condition that he will have to obtain a Doctorate Degree / Produce evidence of published work of equivalent high standard within 5 years of his appointment failing which he will not be able to earn future increments until he fulfils this requirement.

READER

(i) Good academic record with a Doctorate Degree or equivalent published work.

(ii) Evidence of being engaged actively in research.

(iii) Eight years experience of teaching and/or research out of which at least five years shall be as lecturer in the University Department/ College at P.G. level/Hons. level.

PROFESSOR

(i) An eminent scholar with published work of high quality and actively engaged in research.

(ii) Minimum experience of 10 years in teaching and/or research out of which at least 5 years must be in teaching at Post-Graduate level as a full time teacher.

(iii) Experience in guiding research at Doctoral level. A professor may be appointed on contract basis for a specified period.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge may be appointed as Professor by negotiation.

Professor in Economics

2nd Class Master degree in Economics or 2nd Class Master degree in Statistics with specialisation in Econometrics/Math. Economics either at Master or at doctorate level.

(Applicants who have applied in response to this office advertisement No. 2653 dt. 12-2-79 need not apply again.)

Reader in Pol. Science

The candidate should be specialised in any one or two of the following branches. International affairs/International Politics/International Law/ Comparative Governments / Advance Political Theory.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 15/- (Rupees fifteen) only. Candidates intending to receive forms by post are required to send (a) Crossed Postal Order of Rs. 15/- payable to the Finance Officer, Sambalpur University, Jyoti Vihar, Burla (b) a self addressed envelope (23 cm x 10 cm) with postage stamps worth Rs. 3.30 P affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money Order/Cheque will not be entertained.

The last date of receipt of applications in the office of the University at Jyoti Vihar, Burla, Sambalpur (Orissa) is **22-3-80** The candidate will be required to appear for an interview before a Selection Committee at their own expenses.

Issue of this advertisement does not make it binding on the University to make the appointment.

All communications should be addressed to the Registrar by designation only.

J.N. Panda
REGISTRAR

OSMANIA UNIVERSITY
HYDERABAD-500007 (A.P.)

Advertisement No. 2/80

Applications, in the prescribed form together with the registration fee of Rs. 5/- are invited for the following posts in the University service, so as to reach the undersigned on or before **21st March, 1980**.

1. Reader in Micro-Biology—Rs. 1200-50-1300-60-1900.
2. Lecturer in :— English Rs. 700-40-1100-50-1600
3. Lecturer in Linguistics -do-
4. Lecturer in Geo-Physics -do-
5. Lecturer in Geo-Physics (Electronics) -do-
6. Lecturer in Russian -do-
7. Lecturers in Geography (one lien & one S.A.P.) -do-

AGE

Readers—Not more than (40) years.
Lecturers—Not more than (35) years.

NOTE

(1) Age limit does not apply to the employees of this University.

(2) Relaxation in age to the extent of five years may be granted to candidates belonging to SCs., STs and BCs. respectively in the case of Lecturers only.

(3) Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for SCs., STs. and BCs respectively in case of Lecturers only.

Application forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad-7, A.P., on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self-addressed envelope (11-1/2x 26-1/2 cms) duly stamped for ordinary or registered post.

A latest passport size photograph should be fixed on the application form. **No original certificates should be enclosed to the application form.**

Full particulars can be obtained on requisition from the Director, Osmania University Press, **free of cost,** by sending a self-addressed stamped envelope.

B. Ramachandra Reddy
REGISTRAR

GARHWAL UNIVERSITY
SRINAGAR (GARHWAL)

Advertisement No 13/1980
Wanted

1. Professor of Economics—1 Post
Pay Scale
Rs. 1500-60-1800-100-2000-125-2500
2. Reader in Hindi—1 Post
Pay Scale
Rs. 1200-50-1300-60-1900
3. Lecturer in Philosophy—1 Post
Pay Scale
Rs. 700-40-1100-50-1600

Minimum Qualifications for Lecturers

A. Doctorate degree or published work of high standard in the subject concerned, and

B. Consistently good academic record (i.e. the overall record of all assessments throughout the academic career) with First or high Second class (i.e. with an aggregate of more than 54% marks) Master's degree in the subject concerned, or equivalent degree of a foreign University in such subject.

2. Where the Selection Committee is of opinion that the research work of a candidate as evidenced either by his thesis or by his published work is of a very high standard it may relax any of the requirements in the qualifications specified in (B) above.

For Professor

As per Lecturer, besides he must be eminent scholar in the subject and possess at least ten years experience of teaching P.G. Classes and guiding research in the subject.

All posts are temporary but likely to be made permanent and are transferable amongst three Constituent Colleges at Srinagar, Pauri and Tehri.

(Continued)

Applications should reach the undersigned on or before **31st March 1980**. Application forms can be had on request from the office of the Registrar, Garhwal University, Srinagar (Garhwal) by enclosing a self-addressed envelope of size 23 cm. x 10 cm. with postage stamps worth Rs. 2.80 to cover registration charges.

Applications on prescribed form only, supported with a Bank Draft on State Bank of India, Srinagar (Garhwal) for Rs. 7.50 in favour of the Registrar, Garhwal University, Srinagar (Garhwal) 246174 shall be entertained.

Note : For the post of Reader in Hindi candidates who have already applied need not apply afresh, their previous applications will be considered.

P.L. Chhabra
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY : DELHI

HAUZ KHAS : NEW DELHI

Advertisement No. 4/80

Applications are invited for the following posts under Departments/Centres and in area/specialisation as indicated below :

Department of Applied Mechanics: **Professor**: Fluid Mechanics; Solid Mechanics. **Asst Prof/Lecturer** : Fluid Mechanics; Solid Mechanics; Material Science; Design Engg & Systems Planning.

Department of Chemical Engineering: **Professor, Asst Prof**: Reaction Engg; Transfer Processes; Process Plant Design; Process Dynamics; Simulation & Control; Kinetics and Thermodynamics.

Department of Chemistry: **Professor**: Bio; Inorganic Physical; Organic and Theoretical Chemistry. Asst Prof/Lecturer: Bio; Inorganic; Polymer; Physical and Organic Chemistry. **Research Associates**: Ph.D. in Biochemistry. **S.S.O. Gr. II**: Photochemistry of vision.

Department of Civil Engineering: **Professor, Asstt Prof/Lecturer**: Water Resources Engg; Transportation; Highways and Surveying ; Soil Mechanics; Structure; Rock Mechanics/Soil Mechanics or Structures.

Department of Electrical Engineering: **Professor & Asstt Prof**: Communication Engg; Control; Electrical Machines; Power Electronics; Integrated Electronics & Circuits and Computer Technology. **Lecturer**: All branches of Elect. Engg. except Biomedical Engg.

Department of Humanities & Social Sciences: **Lecturer**: Sociology

Department of Mathematics: **Professor, Asstt Prof/Lecturer**: Pure Mathematics; Applied Mathematics; Numerical Analysis and Computer Science; Statistics and Operations Research.

Department of Mechanical Engineering: **Professor**: Welding & Foundry; Metrology & Surface finish; Gas Dynamics and Combustion Engg; Machine Design; Vibration & Noise Engg; Machine Dynamics. **Asst Prof/Lecturer;** Turbo Machines; Power Plant Engg; I.C. Engines; Fuels, Combustion & Pollution; Refrigeration; Heat Transfer; N.C. Machine Tools; Metal Cutting; Metal Forming; Industrial Engg; Instrumentation & Control; Machine Design; Mechanism.

Department of Physics: **Professor**: Applied Optics; Solid State Physics and Plasma Physics. **Asstt Prof/Lecturer**: Applied Optics; Solid State Physics; Plasma Physics and Optoelectronics. **S.S.O. Gr.II (For Laser Application Programme)**: Optical Waveguides.

Department of Textile Technology: **Professor & Lecturer**: Textile Technology/Engineering; Textile Chemistry/Fibre Science.

Centre for Atmospheric Sciences: **Prinicipal Scientific Officer**: Meteorology. Ph.D. with 10 years experience.

Centre for Applied Research in Electronics: **Professor**: Signal Processing/Microwaves & Millimeterwaves. **S.S.O. Gr.I/II**: Microwave circuits; Antennas Millimeter Wave Techniques; Water Arryas and Transducers; Digital Signal Processing; Sonar Signal Processing.

Centre for Bio-Chemical Engineering Research: **Lecturer**: Enzyme and bioconversion process.. **Research Associate**: Microbiology/Chemical / Bio-Chemical Engg.

Computer Centre: **Asstt Prof/Lecturer**: System simulation; Computability; Theory of Programming languages; Operating Systems; Computer Graphics; Switching; Automata theory; Numerical Analysis; Operation research. **System Programmer**: Computer Science/System Programming. **System Operator**: Computer Operation. **Junior Programmer**: Application/System Software. **Software Librarian**: Developing discs/Magnetic tape systems.

Centre for Energy Studies: **Professor**: Power System Engineering. **Chief Design Engineer/Principal Scientific Officer**: Solar Energy. **Asstt Prof**: Laser induced Fusion or MHD Power Generation Solar Energy Utilisation. **Lecturer**: Thermal Engg; I.C. Engines/Automobile / Cumbustion / Machine Design **OR** Solar Energy Utilization (Thermal) **Research Associate/S.S.O. Gr. II**: Power System Engg; Utilisation of Solar Energy; Liquefaction and Gasification of Coal; Laser Induced Fusion; MHD Power Generation; I.C. Engines/Cumbustion.

Centre for Rural Development & Technology: **Professor/Asst. Prof/S.S.O. Gr. I**: All disciplines such as Economics; Humanities; Basic Sciences; Applied Science; Engineering with requisite experience in Rural Development work.

Industrial Tribology Machine Dynamics & Maintenance Engg. Centre: **Professor, Asstt Prof/Senior Design Engieeer, Lecturer/Design Engineer**; Industrial Tribology; Terotechnology; Diagnostics Condition Monitoring; Wear Coating Analysis; Lubrication; Non destructive testing application on line computer application and Bearing analysis.

Instrument Design & Development Centre: **Chief Design Engineer**: Mechanical Engineering Design. **Lecturer/Design Engineer**: Mechanical Engineering Design; Electrical Electronic Design; Photo Fabrication techniques.

Centre for Material Science & Technology: **S.S.O. Gr.II, Research Associates**: Building Materials.

Centre for Systems & Management Studies: **Principal/Chief Scientific Officer**: Master's Degree in Management. Ten years experience.

Pay Scales & Minimum Qualifications

Professor (Rs. 1500-2500)/Assistant Professor (Rs. 1200-1900)/Lecturer (Rs. 700-1600): Good Master's Degree/Doctorate Degree or equivalent published work. Experience 7-10/5/2 years in teaching, research and industry.

Principal Scientific Officer (Rs. 1500-2000)/Chief Scientific Officer (Rs. 2000-2500): Master's Degree/Ph.D. or equivalent published work. Experience 10 years.

Chief Design Engineer (Rs. 1500-2000)/Senior Design Engineer, Senior Scientific Officer Grade I (Rs. 1100-1600)/Design Engineer, Senior Scientific Officer Grade II (Rs. 700-1300): Good Degree in Engineering/M.Sc. Experience 10-12/5/2 years.

System Programmer (Rs. 1200-1900)/System Operator, Software Librarian (Rs. 700-1300)/Junior Programmer (Rs. 650-960): Master's Degree in Engg. or Master's Degree in Mathematics, Applied Sciences/Bachelor's Degree in Engineering. Experience 5/3/2 years.

Research Associate (Consolidated Rs. 1000/- — 1400/-): Ph.D.

Allowances at Central Government rates.

Reservation for Scheduled Castes/Tribes candidates, as per Govt. of India rules, except for Professor & Asstt. Professor.

Application form and detailed information can be had from Assistant Registrar (Estt. I) by sending self-addressed, stamped (75 paise) envelope. Last date of receipt of request for application form is **12-3-1980**. Last date of receipt of completed application form is **19-3-1980 (2-4-1980** for candidates abroad).

SAMBALPUR UNIVERSITY

JYOTI VIHAR : BURLA

Corrigendum No. 3078/Estt. II

Dated 21-2-80

The post of lecturer in Chemistry advertised in No. 1983/Estt-II dated 7.2.80 is a permanent vacancy.

J. N. Panda
REGISTRAR

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University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH APRIL 1, 1980

Food ... Technology
Information Service
29 APR 1980
C.F.T.R.I., MYSORE

Bombay University Librar
&
Rajabai Tower Building
Centenary Year

Royal College of Physicians of London and Royal College of Surgeons of England

Sir Ratanji Dalal Research Scholarship in Tropical Surgery

The Sir Ratanji Dalal Research Scholarship was established under the will of Sir Ratanji Dinshaw Dalal, CIE, MRCP, MRCS, DPH of Bombay.

The Trust requires that appointments alternate between tropical medicine and tropical surgery; applications are now invited for an award in TROPICAL SURGERY, to be taken up not later than 1st September 1980.

The Scholarship is open to medical practitioners registered in any part of the Commonwealth, and may be held in any institution in Britain or overseas that is acceptable to the two Royal Colleges. It will be awarded for one year in the first instance but may be renewed annually up to a maximum of three years in all.

The stipend will be determined by the awarding committee but the total emoluments will not exceed £5,500. The award may, however, be held in conjunction with other support and need not be on a whole-time basis. The emoluments may include an allowance for research expenses and in appropriate cases a Scholar's existing superannuation arrangements may be continued.

Applications must be sponsored by a head of department who can offer facilities and technical assistance for a research project in tropical surgery and must include the following:—

1. Full name, age and qualifications of the candidate with the name of his or her medical registration authority and date of registration.
2. Past and present appointments of the candidate, with present salary and superannuation arrangements, if any.
3. Details of the candidate's research experience and publications, if any.
4. Names and addresses of two persons, in addition to the nominator (whose comments should accompany the application), who may be consulted about the candidate's achievements and potential.
5. A statement (500 words) on the nature and scope of the proposed research project, indicating its probable duration (maximum three years).
6. Particulars of other financial support, if any, assured or applied for, that may also be available to the candidate, and of the proportion of the candidate's time to be devoted to this research.
7. A declaration, signed on behalf of the department, that all necessary facilities will be provided in the event of the application being successful, with an indication whether this is contingent upon the receipt of a grant for research expenses and of the amount, if any, that would be required.

Nominations must reach the Assistant Secretary, Royal College of Surgeons of England, 35/43 Lincoln's Inn Fields, Loddon WC2A 3PN not later than **31st May 1980**.

R.S. JOHNSON-GILBERT, OBE, MA
Secretary
Royal College of Surgeons of England

January 1980

UNIVERSITY OF JABALPUR

Advertisement No. Estt/80120
Jabalpur, dated the 7th March, 1980.

Applications are invited on the plain paper for one post of Professor in Chemistry, in the scale of pay of Rs. 1500-60-1800-100-2000-125/2-2500.

Essential Minimum Qualifications :

(a) (1) A Doctor's Degree or published work of an equivalent high standard; and

(b) (1) A 2nd Class Master's Degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent degree of a foreign University; and

N. B. While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded.

(ii) Atleast 50% marks at the Bachelor's degree examination, the basis of which division is awarded at the degree level by the University; and

(iii) Atleast 50% marks at the Higher Secondary/Intermediate/Pre-University Examinations, as the case may be;

And

(c) (i) Experience of teaching of post-graduate classes shall be atleast 10 years; and

(ii) Evidence of candidates having been awarded a Doctor's Degree under his supervision.

Having regard to the need for developing inter-disciplinary programmes, the degree in (a) and (b) (i) above may be in relevant subjects.

(**N.B.** The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of scheduled caste/scheduled tribe candidates.)

The candidates having specialization in any branch of Chemistry shall be considered for this post. Qualifications are relaxable in cases of candidates of exceptional merit. Names of eminent persons distinguished in scholarships who do not apply may also be considered for selection. The candidates in their applications should give details of their 'Specialization' if any. Canvassing in any form or on behalf of the candidates will be treated as disqualification.

The applications showing the details of qualifications stated above along with the information regarding the proof of date of birth and past experience accompanied with true copies of testimonials and Postal Order for Rs. 10.00 in the name of the undersigned should reach here not later than **30th April, 1980**. The candidates already in employment at present should send their applications through proper channel.

REGISTRAR

UNIVERSITY NEWS

Vol. XVIII **APRIL 1**
No. 7 **1980**

A Fortnightly Chronicle of Higher Education **Price 80 Paise**

29 APR 1980
C.F.T.R.I., MYSORE

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Management of Research

K. A. Jaleel*

Efficient and effective management is as important in Scientific research as in any industrial and business activity. The realization of this truth on the part of the scientific community, is reflected in the frequent attempts to evaluate the processes, procedures and products on research. With financial imports expected to dwindle in the next few years, the stress on scientific management of resources for research has to increase further.

In a broad sense, management refers to (i) the systematic ordering of priorities in the choice of goals and resources; (ii) the organizational structures to attain these goals; (iii) the optimal deployment of resources and their maximum utilization; (iv) the incentives and motivational mechanisms and (v) the evaluation of the out-turn for improvement of the total system.

(i) Priorities Research

The commonly employed criteria for deciding priorities in research have been promise of immediate returns in terms of social and industrial benefits, the practices and experiences in advanced countries, relatively unexplored areas of research, and the availability of infrastructure of facilities and training.

All these criteria are relevant. But in the context of the uneven development of different scientific disciplines in the country more attention will have to be paid to research that will serve as a catalyst or agent for the application of knowledge to social and rural development. Mention may be made here of the need for research in social sciences that will generate principles for bridging the gap between knowledge in agriculture, economics, social and animal sciences and the farm and field practices. Research into rural services, extention, communication, "appropriate" and "intermediate" technology form a high priority area from this point of view.

It is also warranted that certain areas of research are marked out as under developed. This is necessary in order to even out the present disparities. Sometimes the underdeveloped areas hold the key to the fuller utilization of knowledge.

From the point of view of the researcher there is no essential conflict among the theoretical, historical, applied and technical goals of research. However the sponsoring agencies and Universities are concerned with the choices facing them in terms of the relevance of the research to immediate social problems, current trends and the spin-off benefits. Efforts for formulation of priorities by ranking and listing the fields of research have not been very

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Vice-Chancellor, Calicut University.

successful. We need a scientific methodology for determining these priorities.

(ii) **Organizational Structures** :

Two basically different organizational forms are common: the "centre" of "institute" with certain restricted research interests and the multiple interest institutions such as institutes of technology and universities. (Some of the larger specialized institution have the better charateristics of both types of organization). The two basic forms present contrasting pictures in terms of the rigours of scientific methodology and the immediate applied relevance of the work. In the recent years attempts are being made to bring about better interlinking between the laboratory and the industry with the objective of "on the spot" application, the co-ordination between the research institution and field application is no longer, a matter of academic discussion but a matter for immediate heuristic pragmatic solutions.

(iii) (a) **Manpower Planning and Training** :

It has often been pointed out that vast well trained manpower is a very strong backbone of research effort in India. However, this is not a matter for complacence: rather it underlines the task of judicious balancing of this factor with other inputs in research.

One aspect of this question is encountered in the Universities: this is the balance between teaching and research at various stages. Until recently some of the old universities in India had set a tradition; the University departments were to spend most of their effort on research and the affiliated colleges were to spend most of their resources on teaching. This was a division of labour which did not always find acceptance with Universities formed subsequently. Nor did this pattern work very well within the older Universities. There is need to examine afresh and thoroughly the interrelationship between teaching and research in the total context of higher education.

(b) **Training** :

The last decade has been a period of transition from total dependance upon foreign countries for training facilities in advanced research: to-day large areas are covered by indigenous facilities. The pattern of training has been developed on the model of UK and USA—often forming part of the post-graduate teaching programme, additional training is integrated into the M Phil and Pro PhD programmes. By and large this seems to be adequate. But within this pattern there are areas of special strength and weakness. Identifying such gaps in training and providing for their filling up is a task calling for constant vigilance. This is quite a critical matter as often available training restricts the choice of fields of research and of the techniques applied.

Areas such as quantitative methods in social sciences and humanities, experimental and statistical techniques in biological and biomedical research empirical methods in language and literature are illustrative of such areas calling for urgent attention.

(c) **Financing of Research** :

Much has been said about the contracting monetary resources in relation to the expanding needs in research. Efforts directed towards prevention of wastage and efficient utilization of available moneys are urgently needed. "Pipeline delay" is an illustration of the invisible inefficiency in the use of meagre resources: Funds are blocked at the source by being earmarked for a project; yet the work does not get off the ground because of paper work and administrative delays. Administrative concepts that loosen this bottleneck are likely to contribute to the efficiency of the overall research effort.

(iv) **Motivation and incentives**:

The role of adequate monetary incentives to hold first rate scientists in research in competition with lucrative careers in civil service and industry is obvious and has been stressed often enough. But the role of non-financial incentives such as social and organizational status is not adequately realized. Participation and group decision are accepted principles of industrial management today. However, with a few exceptions, the scientific community if left out of the picture in decision making in areas of vital relevance. This is not due to any deliberate intent: as yet effective methods of consultative management have not been fully developed in research.

Research organizations including Universities have to develop methods of resolving the administrator/Scientist role conflicts so that disincentives hampering research work are minimized. Empirical investigations have confirmed our traditional behalf that social recognition and the opportunity to realize one's creative potential are powerful incentives in the case of writers, scientists and engineers alike. Some investigations are going on today in universities and industries on the organizational climate conducive to originality and creativity in human work. The initial forays in this area have turned out to be fruitful and promise to throw light on aspects of social climate which stimulate and nurture creativity.

(v) **Social Accountability and evaluation**:

In the context of the special problems of our country, there is need to evolve new criteria for the evaluation of the input-output matrix of scientific research. The conventional criteria of potential consumer application, fall out into neighbouring fields will continue to be of relevance.

(vi) **Documentation and Communication Services**:

In both basic and social sciences, a good ground work of documentation and abstracting services has been built in the 1950's. However, there is a slackening of this effort in the recent years—due to complacency that comes from the smooth func-

(*Continued on page 167*)

Maintenance of Academic Standards in Indian Universities

K. N. Prasad*

The University, *in general*, is a firm having a number of plants (different colleges, departments and institutes). It is a multi-product (owning different faculties concern). Its products pass out of its portals after different stages of processing (intermediates, graduates, post-graduates, researchers). Some "intermediates" go over to other universities. Some of its finished products stay on in it and get invested or employed as inputs or agents in the process of future production. Their quality (expressible in terms of their knowledge and character) is a significant factor in the determination of the quality of the successive batches of students.

The level of achievement in the subsequent career of those products who join other activities turns on both their ability (power) and will to work, which are largely governed by (a) what they have learned, (b) how much they have learned, (c) how they have learned and (d) whether or not they have appropriate and adequate facilities for utilizing their learning (which might amount to bare capital consumption and hence the resulting fossilisation), of maintaining it in tact and of even promoting (widening or deepening) it. A myriad of variables has to be taken into account, such as follows:—Were the courses studied up-to-date or out-dated? Was there any inter-disciplinary teaching or was it strictly exclusive (for example, the bi-polar concept of humanities and sciences). Were the courses job-oriented or not (i.e., vocationalisation)? Did the students concerned aim at just cramming and passing the examinations? Or, did they strive to make their learning or portions of it an indissoluble part of their being? What were the content and extent of the courses they prepared for their examinations? Did they do mere selective reading by speculating and guessing questions, and hence omitting a host of topics, assuming that the last year's questions would not be repeated, as has become lately customary with the examinees in several universities? If such was the case, then the examination results cannot serve as a satisfactory measure of the proficiency of the students.

It has also to be noted whether the students were taught regularly, or by fits and starts because of the very high incidence of suspension of teaching work owing to frequent disturbances on the campus and a variety of other reasons, whether they received proper guidance from their teachers in the tutorial/seminar classes, whether they were taught well, on the whole, by their teachers, whether they worked hard and regularly themselves, etc.

In any age, more so in the present, learning by itself and in itself is not all; it has to be combined with a modicum of extra-or co-curricular activities for a student to become perfect. Now-a-days, the mentality of the general run of the students is to shun these activities. In consequence, the number of book-worms has been on the increase. The conditions obtaining in the universities have hindered, the growth of their traditional corporate life, which formerly brought the teachers and their taught together into close proximity. The 'commonwealth' character of the university community has been under severe strain. To the extent that the involvement of this community in constructive activities has dwindled, its participation in the destructive ones has multiplied.

All products of a university are supposed to fulfil a certain human need, that is, acquisition of education or learning or knowledge (and character, if permitted) to stop up the quality of life. Knowledge is at once a consumption and a production commodity, being a source of employment and income.

The level or standard of academic attainment or excellence of a university is interpreted or judged by the measuring—rod of viability or competitiveness of its products, in general and the performance of its teachers, in particular. Such viability may be local (or regional), that is, intra-university or inter-university in one and the same State or it may be national or international. It is viability from the national angle which currently forms the crucial or acid test, so to speak. A university, the products of which compete successfully in the all-India tests/examinations and get employed proportionally more, is demeed to be excellent or stated to possess a higher standard, assuming that facilities available to others outside the campus remain equal. We should not also forget in this context that teaching is an art.

True as this proposition is on an average, it is not true in respect of the students of each and every discipline since no university can at any time enjoy a superiority of this kind in all areas of knowledge. Moreover, the academic distinctiveness of a university is a collective or group achievement or gain, being the outcome of shared responsibility. A metropolian university has a definite advantage over an outlying one in being nearer to the *conjuncture*, or sum-total of conditions, which the capital city enshrines within itself. But this has also its debit side in as much as the magnifying power of any causative factor, good or bad, in such a university (more so, when it is residential) is very great, with the result that even a small event, good or bad, gets unduly publicised forthwith.

Besides, we must remember that this relative viability is dependent on individual properties.

**Vice-Chancellor, Patna University.*

There are instances to show that some graduates have fared far better than some post-graduates, although they all have belonged to the same university. The final results are declared on the basis of a written test followed by an oral, in which latter case cent per cent impartiality cannot be vouchsafed.

The features that characterise an ideal university are altogether different from those that characterise a real (i.e., that belonging to the world of our experience) one. In the former the quality-promoting factors far outnumber the quality-dampening ones. Either all students or at least a certain percentage of them is admitted through an open entrance examination. Merit is the all-deciding criterion. Reservation of seats for giving any section of society a preferential treatment is either not in vogue, or if in vogue, is remedied subsequently by special arrangements. The best candidates are selected for manning the teaching posts. All teachers engage themselves in research. Good teaching as well as good research is suitably induced. Teaching and research stand to each other in an ideal relationship. Teaching is to research what is the Bunshen burner or the test tube to the chemist. Students and teachers enjoy maximum facilities of library and laboratory. The university does not suffer from any financial crisis. It has a residential character. Normalcy reigns supreme over the campus. The various components of the university live and work under perfectly harmonious and cordial conditions. Examinations are conducted on time and in a fair manner. External experts are associated with them at all stages. The system of reward and punishment functions effectively and freely. Whatever lapses and aberrations occur from the normal course are soon rectified by the built-in stabilisers of the system, and progress ensured thereby. The management of the university lies in the hands more of academicians than of non-academicians.

But the ideal university is a limiting or extreme case in our country of to-day. The university, which is commonly met within the real world, is marked by opposite conditions. There is a mushroom growth of colleges, and overcrowding (a sort of population explosion) in most colleges, particularly in these teaching science and/or commerce alongwith arts, disproportionate to the infrastructure available in them. Seats are reserved on various grounds. Merit is scarcely the only consideration in admission of students and recruitment of the teaching and non-teaching staff. A lot hinges on such ulterior or extraneous considerations as caste, party loyalty, group or pressure tactics, *pairvi*, and the like. The university is interminably in the red. It is constantly in the grip of unrest, chaos and turmoil. The unions—of the students, of the teachers, of the employees-keep the university in a warning state by working up agitation and tension in turn. There is inadequate, irregular and imperfect teaching. Practical work is on suffrance. Verbalism predominates in science teaching. Things are any how tolerable up to graduation. After their graduation the students are apt to treat their stay at the university as waiting until they are able to find out a job and hence they do not evince much abiding interest in their studies. This listlessness or insipidity is typical of a chronically unemployed economy. Research is intensely restricted, if not otherwise unknown. Examinations are delayed. Unfair means is resorted to on a mass scale. Examinees stage walk-outs on one pretext or other. Either re-examinations have to be held or average marks have to be awarded. Results are frequently moderated and grace marks are frequently awarded with a view to raising the percentage of passes and thereby enabling a larger number of graduates to obtain the requisite percentage of marks in the aggregate, for being eligible for certain all-India competitive examinations (say, in banking and insurance). Favouritism knows no bounds. Monopoly and vested interests have their footheld in the academic and administrative bodies and they are mostly from outside the university. But they are, in effect, more powerful than their teacher counterparts. The entire atmosphere is vicious, suffocating and politicalised. The retrogression afflicting the university becomes a cumulative process. It is propagated by a multiplicand. An unending flight of good students (and teachers) from the university takes place. But in a good many cases they are *pushed* rather than *pulled* by the superior, prestigious universities. This is compounded by the ever-increasing frustration and disillusionment suffered by the few dedicated and conscientious teachers. The majority of teachers neglect their duties. They do not add to their knowledge. They simply impart it. This is analogous to capital consumption, to drawing a perpetual royalty, as it were. Some run or teach in private coaching institutes or take to hack writing and earn plenty of *black money*. Some engross themselves in paid extra co-curricular activities and often remain away attending camps and workshops. Some accept too much examination work from other universities. They are always on the camel's back. Some make it a point to attend all manner of seminar and symposium organised anywhere in the country. The actual number of lectures and tutorial classes engaged by these categories of teachers in a session is nominal. The existing practices in several universities encourage such absence and the consequential neglect of duties. Gone are the days of dedicated, self-sacrificing teachers, notable for their simple living and high thinking and 'cloistered' life. Rank mercenarism rules the roost.

As a rule, the vice-chancellor is not only the administrative but also the academic head of a university. None-the-less, the extent to which he can be successful in the latter capacity depends largely on his academic personality. If he is a distinguished scholar (and has been a fairly senior teacher), he evokes due respectability for himself and provide the academic leadership expected of him. On the other hand, the chance of his success is not great if his is a basically "political" appointment. Apart from this, he must be free from this numerous administrative responsibilities and chores to devote his time, and energy and attention to the academic renovation and improvement of his university.

Higher education in our country has not evolved from the indigenous conditions but instead it has been, by and large, a mere copy from the Western system and in spite of a long elapse of time it has not been possible so far for us to effect a reasonable degree of harmonisation between the two.

The socio-economic backgrounds of the different constituents of the university community get vividly reflected in the campus life.

Our existing universities are plagued by the drawbacks of a permissive society, the continuously rising average age at marriage (which has definitely lowered the sense of responsibility), a glaring lack of a national will or ethos, the collapse of the value system, incessant deterioration in the standard of education at all levels, milling of shaddy products and of unemployable graduates by the universities (who come to compose the critical, cynical band of the 'lumpen proletariat'). The universities comprise an oligopolistic market. Motivations and anticipated decisions play a potent role. Decisions interact. Decisions taken by one university deeply influence those taken or to be taken by other universities in the same region or even outside it. At times the Government administers their teaching schedule by ordering its suspension on grounds of law and order or conducting of general elections. Generalising, we can say that the academic standard of a university is a function *inter alia* of the level of economic prosperity attained by the State or the region in which it is located. It is a function also of the distance of the State university from the Centre insofar as the universities nearer it have greater access to the bodies that finance higher education. The Central universities do not have to face financial stringency whatever their distance from Delhi. They enjoy more opportunities and encounter fewer obstacles, compared to the State universities. They are like big cities, the so-called like "magnets".

The academic standard of a university is also contingent on the social environment or milieu around it, the attitudes, approaches and expectations of the public at large, including the parents/guardians of the students (whether they take active and keen interest in or are indifferent to its multifarious affairs) and its 'old alumni', of the Government (which profoundly determine the degree of its autonomy, administrative and financial), and, last but not the least of the bodies like the University Grants Commission.

During the short run a university can at best exert its utmost to achieve stability by directing its activities in accordance with the norms of teaching, research and extension laid down by the University Grants Commission. This would be possible only when there is uninterrupted and unbroken peace, amity and goodwill on its campus for some years to come. As such, the immediate task to which a university should address itself is to consolidate its existing position by launching a campaign to contain those forces which account for the persistence of indiscipline on the campus and off it.

During the long run a university should be in a position to call its attention to the goals of progress and development, such as opening of new departments, proper balancing of teaching, research and extension, meeting of its felt needs, improvement of its faculties, re-structuring and streamlining of its curricula, providing for inter-faculty mobility or flow of students, reform of the modes of examination, achievement of autonomy, both organisational and financial, identification with the society around itself to prove its social relevance and usefulness, forging of a mechanism whereby efficiency tests for the students and staff can be monitored with absolute objectivity, revamping of the system of reward and punishment, promotion of the 'delivery' technique so that class-room teaching is properly received by the students, exposing the students to the latest ideas, idioms and nuances of sciences and humanities by arranging extra-mural, popular lectures for the, exchange of good teachers for a term, sending the best students for a period to the best universities, and so forth. Any attempt to realise complete or rigid equality or uniformity in academic standards of all the universities will be neither feasible nor desirable. However, ways and means should be devised whereby all universities have a minimum academic standard. In most universities the stuff to which the teachers have to deliver their lectures is at present so inferior, so deficient, so ill-equipped mentally, and has such a poor receptivity capacity that they have *per force* to lower the sights and heights of their lectures in order to make them minimally intelligible to it, leave aside the object of inspiring them to wider and critical reading. All the same, it would be worthwhile to elevate the status of the laggard but potential universities so that they burgeon into counter-magnets. Likewise, it would be expedient to develop a few colleges and institutes as centres of excellence by limiting admission to only those who can afford to pay for their higher education at the market rate, for at the moment higher education is a heavily subsidised public consumption good. □

Management of Research

(*Continued from page 164*)

tioning of a service. There is need to augment these services and to utilize them more fully.

Not every one of the large number of MA, MSc, MPhil and PhD dissertations may be a masterpiece: yet the sports of creative ideas contained in them have to be recorded, identified and catalogued. Publication of abstracts of dissertations and of work in progress must be made more comprehensive and timely. Financial support for this effort is essential and must be viewed as many times as rewarding as investment of a corresponding sum of money in research itself.

A newer dimension in management as well as in documentation is introduced by the current stress on inter-disciplinary research. The scope of research which is problem oriented and which cuts across conventional boundaries of sciences is fully recognized—yet the organizational response has been far from sufficient. Documentation which will bring out and further facilitate cross disciplinary interaction is the need of the hour. □

Future Philosophy of Asia

J. A. Karunaratne*

It is often assumed that the future of any human activity can be understood only in relation to the past. This cannot, however, mean that the future is so completely determined by the past that what is implicit in the past is made explicit in the future. What is yet to come may bring its own surprises? It may belie expectations or could take us beyond all that was to be expected on the basis of past experience. This is the reason why history is unpredictable.

Though the historical process flows from human decisions, what matters is not the decision of one individual but that of many in their positive and negative interrelationship. If we try to imagine how philosophy will develop in the Hindu-Buddhist context in the future we will have to take into account many considerations. Above all, we will be called upon to look at philosophy in its classical heyday and its post-classical stagnation.

If it is true to say that the best introduction to philosophy is the history of philosophy, it is even truer to say in our frame of reference that the history of philosophy is not only an introduction to philosophy but it is the whole philosophy. This by no means underrates the significant development of Hindu-Buddhist thought in the recent years. But the recent Hindu-Buddhist thought has not yet been fully crystallized. It is not yet gone beyond expositions of classical masters, commentaries of the classical texts, attempts to appreciate Hindu-Buddhist tradition in a comparative framework and to see modern insights or even "oversights" as parts of the South and South East Asian tradition. Again, it must be remembered that the philosophical situation in a country cannot remain unaffected by its socio-political milieu.

Experience and Silence. The philosophy or darsana in the South Asian tradition is not the same as philosophy in the Western tradition. It is more akin to hikma of the Iranian perspective. It is true that theoria in its original meaning is vision. In the course of time, however, the theoretical sphere stood for conceptual construction led to a priori constructions independent of experience. The Hindu Buddhist philosophy can be understood through a dichotomy familiar to Western thought between empiricism and rationalism. The Hindu-Buddhist philosophy is experience and this experience has much wider significance than that of the empirical western tradition. As experience, it cannot be taught but communicated. The communication of philosophical truths through a dialogue between a master and disciple is not unfamiliar to the Hindu-Buddhist tradition.

However, there is a deep difference between the Socratic dialogue and the conversations which took place between the master and the disciple in ancient South Asia. The "awakening" is effected on a much deeper level than was possible in the Greek setting. Hence, though philosophical discussions have been very common in ancient Asian scholarly tradition, they always presupposed the possibility of realisation. Argument has only a traditional character. Once we have understood what is "meant" the discussion ends and silence will be the most natural outcome. Oriental wisdom like oriental love can only be whispered and hence silence is the most spontaneous conclusion.

A remarkable fact which is never to be lost sight of in Oriental philosophy is that this discipline has at least this much in common with art that the pattern of one's philosophical thought is equally determined by historical conditions and one's personal perspective. The classical Greek way of philosophy began with wonder, modern philosophy with Descartes began with doubt and the Hindu-Buddhist philosophical consciousness was provoked by the experience of suffering. This means that, in spite of the universality of philosophical experience its specific mould varied from period to period of history and from culture to culture. Even in the same cultural context the accents shift: as a cursory glance at the philosophical situation in the West may amply testify. With all the horrors the West passed through two global conflagrations it would not be expected to remain the same.

What is remarkable about philosophy is the fact that every nation has its own philosophical tradition and even within the broad framework of the same culture there may be widely different philosophical traditions. Within the Western philosophical tradition there are German, British, Italian, French and Scandinavian variations of philosophy. It is interesting to see how divergent they are. Hence, it is not rare to find movements which, because of their national saturation and conditioning, may hardly find an echo in another tradition and may meet with little understanding and appreciation. Thinkers like Louis Blanc, Mikhail Bakunin, Peter Kropotkin with all their novel ideas and social insights could not have any impact on the Anglo-Saxon tradition. The deep thought current of the Buddha Dhamma also creates problems for the Western intellect. In spite of the fact that the message of Sri Aurobindo's philosophy is conveyed through a foreign language, it presupposes acquaintance with the whole of Indian philosophy to be intelligible to the foreign student.

Another very important factor to be taken into account is that philosophy has its roots in language and, try as one may, the philosophical problem cannot be adequately expressed through symbols only. One of the main reasons why Hindu-Buddhist philosophical thoughts have yet not succeeded in securing their own place in the world of philosophy is language. Hindu-Buddhist philosophy have their roots in Pali and Sanskrit and cannot be expressed through the medium of any Western language without forfeiting their identity. It is, therefore, all the more necessary to cultivate South and South East Asian classical languages and this study should be maintained more fervently. It may not be satisfying, therefore, only to teach languages like Pali, Sanskrit and Hindi in Western academies, but also the languages like Sinhala which houses the treasure of the Buddhist philosophy.

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The Hindu-Buddhist philosophy as they are developed today and as they may develop in the future cannot bear repetition of the thought patterns of the classical period. As the Asian history did not come to a close with the classical period, the same thought cannot be said to have come to an end with the Vedic and Buddhist period. In the course of time foreign influences began to work and the impact of West Asian culture and of Occidental thought has been undeniable.

Whereas it is now realised that modern thought cannot be understood without any reference to medieval thought, it is not fully realised that medieval thought cannot be made intelligible without a reference to pre-medieval scholasticism.

Now the most pertinent question is to ask: what after all is the Asian philosophy of Hindu-Buddhist tradition ?

If Asian philosophy is to develop in an authentic way all the historical forces which have made the nation what it is today have to be reckoned with. Asian philosophy cannot be considered a finished product, complete in some period of history, but a living process which will continuously grow. It will retain its identity through the diversity of its constituents and through persistent growth.

The world has witnessed many revolutions but these revolutions have not been possible without any philosophical motivation. Great philosophers have been the "unmoved movers" of the world history and it will be left to our philosophical minds to rise to the occasion. So, instead of being silent spectators sheltered in some academic asylum (which are fast loosing their raison d'etre) and talking about the whole mankind (and women-kind), they would be called upon to give direction and guidance to the new-comers who know how to act and offer sacrifice but are not enlightened enough to know the goals worth sacrificing for. ☐

Development of a Good Management Information System

P. Sivalingam*

With the increasing enrolment in Universities and the proliferation of the number of courses and programmes, it is increasingly becoming difficult to extract information when it is badly needed. Of late, many universities have computerised the preparation of students' mark grade sheets. Beyond this work which are almost completely being carried out through external private computer service bureaux, no other significant use of computers seems to have been made within the universities. The modern high speed computer can assist the planners and administrators of our universities to take meaningful decisions at the right time by monitoring information at a speed and reliability which cannot be matched by any manual or mechanical means.

Micro and Mini Computers are now available at costs ranging from about Rs. 10 lakhs and with an annual recurring budget of about Rs. 3 lakhs, a very good and compact centralised source of information could be maintained. The UGC in its pattern of funding must be requested to provide funds for this specific purpose to improve the information system that is available in our Universities.

Need for appropriate or relevant research

Research is one of the major activities with which all universities are concerned. At the moment there appears to be broadly three categories of research that are being carried on in our universities. These are

(1) basic research
(2) applied research and
(3) development research.

Needless to say, all these are important and relevant in their own right. But in a country like ours the question of excessive indulgence in basic research needs to be looked rather closely. The funding agencies should make it a policy to encourage the applied and development research projects in preference to the basic research projects. Wherever possible the research activities should emphasise applied rather than basic research and should most preferably result in the immediate application of the fundings or results of such research in the relevance of Indian problems. ☐

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CONVOCATION

Complex problems of Higher Education

Getting University degree is only a means to an end, not an end in itself. It merely equips me to enter in a profession of his choice. Please do not think that you have learnt everything and known everything; for wide and extensive are the vistas of knowledge. The horizon is fast widening and what you have learnt may just be a drop in an ocean. What is taught in a University is a method of acquisition and assimilation of knowledge, pertaining to different subjects and disciplines. Knowledge and learning can never be a static thing. Almost every discipline is fast growing and being enriched with new frontiers of knowledge. Perhaps, each one of us, even at a very late stage of career, has to continue to be a learner. This learning process continues throughout one's life. Besides formal methods, there are various other non-formal means and avenues which go on enriching our knowledge and experience. Life and society are much larger and certainly life's experience cannot be covered or taught, in a span of a few years spent in a seat of learning. As a matter of fact, the basic purpose of the seats of higher learning is to properly equip the mind to be receptive to new ideas, to be able to analyse and sift facts and perceive new dimensions of knowledge. To achieve this, one must have a disciplined mind with an inquisitiveness to learn, analyse and assimilate. It is a searching and questioning mind, accepting nothing that is not supported by critical analysis and rejecting nothing which has been scientifically proved and results properly tested. A disciplined mind thus has the scientist's training and traditions of questioning, analysing, understanding, assimilating and thus creating new knowledge. What, therefore, you have acquired is a properly organised inter-dependent and inter-related knowledge, which has equipped the mind in a scientific spirit of quest and enquiry, making your brain a sharp intellect, with the tools of analysis and not just a lumber room stacking unrelated and unconnected things.

If we took to the economic, social and political history of a number of developed nations of the western hemisphere, it will be seen that revolutionary changes in the social, political and technological spheres were effected over a comparatively longer period and very often these have been effected independently in different spheres, of course, with a degree of inter-dependence. In our country, however, after attainment of Independence, we had the task before us of bringing about revolutionary changes in a comparatively shorter span of time and simultaneously, in the social, political and technological spheres, all compressed and rolled in a package for the ultimate objective of building up new socio-economic order based on socio-economic justice and free from exploitation. In this task of national reconstruction, the most crucial input obviously, is the human material, particularly those who are to be the architects of building up the new socio-economic order. With this objective, we have progressively tried to increase the investment on this crucial input of education, so as to have its proper, purposeful and viable orientation. It is true that the social return of this investment baffles quantification. In the economic and technical sphere, however, perhaps it may be possible to have some sort of exercise in demonstrably quantifying the rate of return on this investment, through computing employment, including self-employment and other quantifiable results.

Education can be an effective instrument of bringing about qualitative socio-economic change. Revolutionary changes in the social, political, technological and economic spheres, have their own degrees of independence and inter-dependence. Unless our various development programmes are properly and purposefully balanced, the affluence brought about through development efforts can even be responsible, at times in a concomitant way, of generating regional and social tensions. This can be due to the widening gap between development of different regions as also due to benefits of development being unevenly shared by different sections of the society. As a matter of fact, the problems of the modern individual, group and society can significantly be described as 'tension management'. Our younger generation has before them the task of being 'social engineers', in helping to build up a new social order, free from exploitation and based on the ideals of social justice.

Over the years there has been substantial quantitative expansion in the field of education in India and consequently we have one of the largest educated manpower in the world. Simultaneously we are confronted with the problem of educated unemployment, not only in arts but in technical lines as well. Substantial amounts are spent by parents and guardians over higher education on their wards in the hope that on completion of educational course they would automatically be getting a lucrative employment. When they are faced with the problems of unemployment on passing out, it obviously creates a lot of frustration and disappointment, both to the students and their guardians. This happens because the University degrees are unfortunately sought, very often, merely as a passport of employment. University education, however, has a much larger and wider objective of training the minds and developing skills so that students passing out can become useful members and contribute to productive activity of the society. The situation of frustration to which I made a reference arises because, somehow or the other, possession of a degree has been linked with employment prospects and opportunities. In recent times, however, a number of organisations, instead of going merely by degree, have been conducting their own competitive examinations for recruitment of different positions under them. Very often this becomes necessary because of the difficulties in reducing qualifications of different Universities and Institutions to a common parameter. A common competitive examination exposes products of different universities to such a process. As a matter of fact, on the basis of my experience of higher education and association with recruitment policies, I can venture to pose before you the question as to whether and how far the possession of University degrees could be delinked from at least certain categories of jobs. This will reduce such quantitative expansion of numbers that might be due to more job seeking. Only those persons should seek higher education who feel that they are either equipped or have the potentialities of benefiting in a qualitative way from University education. Instead of aspiring to be merely job seekers they should aspire to equip themselves to become potential employers. This emphasis on self-employment and becoming employers themselves can help tackle the staggering problem of educated unemployment and eventually would help in creating a self-generating economy through a multiplier effect in an expanding economy.

Instead of remaining complacent with the quantitative expansion of education we have thus to bring about and aspire for a qualitative change so that higher education can be effective instrument of socio-economic change. Acquiring intellectual qualities, moral and spiritual values and discipline would help to build a balanced and integrated personality with a distinctive indelible imprint of the culture imbibed in the Alma Mater. This is the purpose of higher education in the true sense of the term. There is no room for the belief that all education is a social good. If the standard of education is high and quality good, it can be the most powerful tool for the national development, if, however, its standard is unsatisfactory, it may create social problems and retard progress. Employability of a person is dependent on the quality of education he has received. This partly explains the magnitude of educated unemployment in India.

In Indian situation, where each region has its own developmental programmes, the role of universities in promoting regional development, cannot be over-emphasised. Thus researches conducted in the Universities should have to have a purpose and a social objective in the context of national plans for India's socio-economic development. Whether one is a social scientist or a physical scientist, there has to be a greater emphasis on inter-disciplinary and problem-oriented research projects. This is all the more essential for a developing nation. A number of areas can be identified for such type of research where Universities can usefully contribute. There was a period when we had to simulate technology from other countries. Transplantation of a foreign technology obviously has its limitations in our own socio-economic ethos. Now, a time has come when we have to devise technology that would stem up from our own indigenous requirements and resources and is consistent with the socio-economic requirements and objectives of our country.

(Excerpts from the Convocation Address delivered by Dr. A.R. Kidwal, Governor of Bihar at the Utkal University.)

Subscription Rates

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CAMPUS NEWS

Bombay University Library Centenary Celebrations

The centenary year celebrations of the Bombay University Library and the Rajabai Tower Building were formally inaugurated by eminent educationist, Dr. V.K.R.V. Rao on 27th February 1980 at a well attended glittering function on the lawns of the University gardens. It was on February 27, 1880 that the Rajabai Tower housing the University Library was declared open to readers.

In his inaugural speech Dr. Rao pointed out that this Library should be preserved as a living entity, as the place had a distinct personality of its own, which had been conducive to intellectual pursuit. He said that the Library had not only imparted knowledge to thousands of students but also provided them with a certain cultural background. He suggested that the University set up four Sub-Libraries in the different suburbs of the city which could be co-ordinated by University Library. Dr. Rao also proposed that the Bombay Municipal Corporation and the University of Bombay jointly undertake a project to establish a sister library in the city for the benefit of knowledge-seeking citizens of Bombay.

Earlier Prof. Ram Joshi, Vice-Chancellor said that it was on February 27, 1880 that the Rajabhai Tower having the University libraries declared open to the reader. He traced the historical development of the University Library and the role it played in the scholarly world. Former Librarian Dr. P.M. Joshi, Architect Shri J.G. Bodhe and Industrialist Shri S.P. Godrej who are all among the members of the Centenary Celebrations Committee referred to the Committee's Rs. 75 lakhs development project of the Library.

A place of honour was given on the dias to Mrs. Tarabai Manekchand, daughter-in-law of late Sir Premchand Roychand, whose two separate donations of Rs. 2 lakhs each a century ago resulted in the creation of the Library and the tower in memory of his mother Rajabai.

In 1879, the library consisted mainly of the following collections :—

(1) a number of miscellaneous books (mostly historical and biographical) presented by the Government in 1864, when the old library of the East India Company, was removed to the India Office some of the books being divided among the Indian Universities.

(2) Dr. John Wilson's Collection: This was purchased in 1987 by the University from the heirs of Dr. Wilson (after whom the Wilson College is named) and consisted mainly of Orientalia, and books on travel and theology.

(3) books presented to the University.

In the early years, the library had an annual book budget of Rs. 400 but this was later discontinued so that in about 1900 we find that "the only additions now made to the library are the official publications sent in by the Local Government and the Government of India and some school and college books presented by publishers." The library then had 4,504 books and 214 manuscripts.

It was only after Sir Alfred Hopkinson's report of 1914 that attention began to be paid to the planning and development of the library. Sir Alfred suggested the appointment of an experienced Librarian and also appointment of a Library Committee under the control of the University Syndicate.

The annual grant to the library was renewed but the amount was not fixed and it varied according to circumstances. In 1930, the library got a non-recurring grant of Rs. 50,000 from the Government to strengthen its collection for post-graduate work. In July 1932, a book grant of Rs. 8,500 was made. It was increased to Rs. 18,500 in the following year and the year later to Rs. 20,000. Thanks to the various loans and donations including from the U.G.C., the India Wheat Loan Fund other individuals and organisations, the library's stock of books and periodicals has been steadily growing and the library today is literally bursting through its seams, even though four tier annexe to the main library building to provide space for 2,20,000 books was built in 1959.

The library is particularly rich in various reference materials, bibliographical tools, books on Mathematics, the Social Sciences and Indology. It has also a valuable and rare collection back files of periodicals in Sciences, the Social Sciences and Indology.

The library possesses more than 1,190 Mss. in Arabic, Persian and Urdu and about 7,418 in Sanskrit and allied languages.

A descriptive catalogue of the Arabic, Persian and Urdu manuscripts in the library compiled by Khan Bahadur Abdul Kadir-e-Sarfaraz was published in 1935. This collection contains manuscripts on the Islamic theology, logic, metaphysics, Sufism, history, biography, literature, lexicography, astrology and astronomy, medicine, archery, falconry, Dakhni language and Zoroastrianism. There are also translations of Sanskrit works.

The second collection of the Arabic, Persian and Urdu Mss. which contains some valuable Mss. in Dakhni Urdu belonged to the late Maulvi Muhammad Yusuf Khatkhatay of Bombay. This collection was brought to the notice of the University by Professor A.A.A. Fayzee and it was purchased for the library from the heirs of the late Maulvi Saheb. A catalogue of this collection is under preparation.

A valuable collection of 160 Arabic Mss. was donated by Professor Fayzee in 1962. These deal with law, history, theology and philosophy of Mustalian Ismailis, popularly known as Daudi and Sulaymani Bohras. This collection has a special significance because it makes available to scholars and research workers material which was deemed to be highly secret and not allowed to be in the hands of non-sectarians. Some of the unique items in this collection are: "Kitabul Islah" and "Alamun-nubuwa", two important works of the first Ismaili author, Abu Hatik ar-Razi; most of the works of Hamiduddin at Kirmani, chief writer of the Fatimid period; some of the works of Mu'ayyad fid-din ash-Shirazi, another famous writer of the Fatimid period. A descriptive catalogue of this collection compiled by Professor Muizz Goriawala was published in 1965.

The first collection of the Sanskrit Mss. is known as the Bhagvatsinghji Collection of Sanskrit Mss. This has been built up out of the proceeds of a special endowment made in 1885 by the Thakor Saheb of Gondal. The second collection of the Sanskrit Mss. is named as the H.M. Bhadkamkar Memorial Collection. This was brought together by the late Professor H.D. Velankar, named in the memory of his teacher, the late Professor H.M. Bhadkamkar of Wilson College and presented to this University. This collection consists of 1,200 Mss. and includes many important and interesting manuscripts among which is one of "Ganeshakutukamrita" a poem in Sanskrit in the praise of Ganesh written by Nanasaheb Peshwa. The manuscript is incomplete but it was the only one known at the time. The collection also has 52 rare manuscripts in Marathi. A descriptive catalogue of these two collections compiled by Professor G. V. Devasthali was published in 1944. The third collection of the Sanskrit Mss. in the library is called the Itchharam Suryaram Desai Memorial Collection of 1,688 Mss. This was presented to the library by the proprietors of the Gujarat Printing Press, M/s. N.I. Desai and B.I. Desai, sons of the late Itchharam Suryaram Desai. It contains a "Matsyapurana" manuscript which is nearly 340 years old and also a valuable set of "Bhrigusumhita." A descriptive catalogue of this collection complied by the late Professor H.D. Velankar was published in 1953.

Inauguration of Bombay University Library

Another valuable collection of manuscripts is the Moropant Collection donated by the descendants of the celebrated Marathi poet and consisting of 1,174 Mss. in Marathi and Sanskrit on various subjects. Some of the poets' autographs are also available in this collection. A descriptive catalogue of this collection is under print.

Recently, 210 Mss. in Sanskrit and allied languages were acquired from Jodhpur and among them is an anonymous work on the Marathi language entitled "Dakhanibhasha Stavanam", several beautifully illustrated manuscripts, also 23 Hindi Mss. and one of them a rare item entitled 'Barahata Naraharadas' as Avataracharitra.

Since the publication of the two catalogues of the Sanskrit and Prakrit Mss., the library has acquired in all 1,275 Mss. either by gift or purchase. A printed catalogue of these Mss. is under preparation.

In 1959, the library received an endowment to commemorate the services to the cause of education by the late Smt. S.U. Shukla. The object of this endowment is to build up in the University Library a collection of Gujarati Mss., old and mediaeval, early printed books in Gujarati and also micro-film of original Mss. Some rare books and Mss. have been acquired so far for this collection.

Besides, the library has 181 palm leaf manuscripts written in Grantha script.

The library has a fairly good collection of early Indian imprints, many presented by Professor A.K. Priolkar who also recently gave a donation of Rs. 20,000 for the purchase of early Indian imprints for the library. A catalogue of the early Indian imprints in Marathi and Gujarati in the Library was published in the Journal of the University of Bombay, Vol. XXXIV, Part 2, Sept. 1965. Another selective catalogue of these rare books was published in 1967 on the occasion of an exhibition to commemorate the centenary of the Press and Regulation of Books Act, 1867.

During the last few years, the library has been able to acquire some valuable source and research materials which include :—

1. A collection of diaries, account books and personal records of old Bombay families, among which may be mentioned the records of Sir Jamshedjee Jeejeebhoy, the first Baronet, ranging over a period of 1826-1876 and Serene Maneckjee Cursetjee (1857-1939).
2. Newspaper cuttings presented by Mr. Ashana Irabatti of Sholapur mostly from the Marathi language newspapers since 1825.
3. Microfilm copies of records of interest for students of the Maratha history from the French archives.
4. A collection of miscellaneous letters and newspaper articles of Dr. B.R. Ambedkar.
5. In 1972, Dr. Baburao Patel presented to the University Library 750 files of newspaper cuttings all systematically arranged topic-wise, mostly dealing with Indian and International Social and Political conditions in 1950s and 1960s. This collection also contains cuttings on various important personalities, both Indian and foreign.
6. In July 1978, a collection of over 12,000 books and back volumes of journals in Marathi, English, Hindi, belonging to the family of Lokhitawadi, Pune was purchased.
7. A collection of art books presented by Mrs. P.F. Pavari.
8. A collection of 342 rare letters of late Lokhitawadi presented by Dr. (Smt.) Indumati Parikh.

The University Library receives books and journals by way of *gratis* and presentation from a number of individuals and institutions.

Jawaharlal Nehru library at Vidyanagari Campus

A unit of the University Library was started in July 1971 at the Vidyanagari (Santacruz) Campus of the University when the Departments of Statistics, Physics, Chemistry and Geography were shifted to this Campus. With the shifting of Departments of Economics, Sociology, Applied Psychology and Mathematics there, thousands of books and periodicals pertaining to these Departments were transferred from the Fort Library to the Vidyanagari Campus Library which was then housed in the Arts Faculty Building.

The construction of the Library Building was started in January 1973 and its first phase completed in July 1976. The new library building, named, Jawaharlal Nehru Library was inaugurated on 18th October, 1976. The second phase of the construction has been recently taken up, and is in progress.

The Jawaharlal Nehru Library now functions in a fullfledged manner and caters to the library needs of students, scholars and faculty members of the Departments situated on the Vidyanagari Campus.

The resources of these libraries are used not only by the faculty and students of the University and its affiliated Colleges but also by research scholars, firms, institutions and the various Government departments in the city. Through the inter-library loan service, the library makes books available to scholars and research workers. It also procures photo-copies and micro-copies of rare materials from other libraries, when requested by research workers and supplies photo and micro-copies of materials available in the Library, the cost of copying being borne by the reader.

The Library at present has a stock of over 4,50,000 volumes.

Museum Section

The Library has developed a museum section comprising of special collections of newspaper cuttings and clippings, letters and diaries, photographs and portraits, maps and other non-book material.

Department of Library Science

Training in Librarianship in this University was started in 1943 when a Diploma in Librarianship Course was instituted by the University Library. In 1964 a full-fledged Department of Library Science was established and the Diploma Course was converted into the Degree Course (B. Lib. Sc.) with some changes in the syllabus. The Master's Course leading to the M.Lib.Sc. degree was introduced in 1967.

Saurashtra University organises camps

The College Development Council of Saurashtra University has planned a scheme to establish contact between the teachers of affiliated colleges and the teachers of university departments. Under this programme an affiliated college can invite one or more teachers from university departments for a maximum of 3 lectures/seminars in a subject taught at the undergraduate level at the college. It will provide an opportunity to college teachers to disucss the matters regarding teaching of certain topics prescribed in the subject with the teachers working in the university departments. The affiliated college will provide hospitality but the university will bear the travelling expenses of the university teachers.

Uptil March 1980 as many as thirty lectures by different university teachers have been delivered in the affiliated colleges. The College Development Council has also recommended to the Syndicate to make available the facilities in the university library to college teachers from mofussil colleges on Sundays and holidays.

The university also organised the national adult education programme with the assistance of the University Grants Commission. So far 117 adult education classes have been run by the teachers and students in various urban and rural areas selected by the colleges. The total number of adults having benefitted by these classes is about 3,500 (2,600 males and 900 females). The NSS students along with their studies in the colleges are running these classes. They are also visited by the development officers of agriculture department, members of the taluka Panchayat and leading social workers.

The university organised eight college level and four university level training classes and seminars for the benefit of the NSS workers who were to participate in NAEP work. A conference of college teachers was organised in which surpunches, village workers and taluka and district development officials also participated. The adult education classes have been providing useful information and practical hints in regard to day-to-day life affairs like working in post office, bus travels, cooperative society, national saving schemes together with knowledge of three Rs. The adult education classes also supplement information received by adults through radio and newspapers.

Workshops held at BC Krishi Viswavidyalaya

The Bidhan Chandra Krishi Viswavidyalaya organised a training programme of the workers of voluntary agencies on crop production, animal production and treatment and fish production in collaboration with the Association of Voluntary Agencies for Rural Development. The training programme was attended by representatives of various voluntary organisations from Howrah, Midnapore, 24-Parganas, Hooghly, Bankura and Birbhum districts.

A rural journalists workshop was held at the communication centre of the university in collaboration with the Eastern India Centre for Mass Communication Studies. A large number of journalists participated in the workshop. It was felt that the rural newspapers/journals could play a vital role in the implementation of agricultural and rural development programme in the villages and they could also serve as source of feed back about the problems of rural life. Rural newspapers should be given more emphasis for regional development.

The university also organised a state level seminar on problems and prospects of Mushroom cultivation in West Bengal. The mushroom workers of Calcutta University, Jadavpur University, Visva-Bharati, State Agricultural Research Institute and Bidhan Chandra Krishi Vishwavidyalaya participated in the deliberations. It was recommended that the mushroom workers should intensify their work on the utilisation of various types of agricultural wastes for the production of spawns, on the methods of testing for the purity and quality of the spawns, on the low cost containers for the transportation of the spawns and on the protection and preservation of mushrooms. It was also recommended that further explorations were to be made to collect germplasms for domestication and evaluation. It was suggested that the research may be initiated on mutation and breeding for the improvement of existing cultivars. Attempt should also be made to develop high temperature tolerant cultivar of *Agaricus bisporus*. In the extension of technology of mushroom cultivation it was decided to give emphasis on the cultivation of *Pleurotus sajor-caju* with the small, marginal and tribal farmers, emphasis should be given on training and demonstration.

Journalism conference held at Varanasi

Mr. Justice A.N. Grover, Chairman of the Press Council of India, while inaugurating the first Indian Journalism Congress in Varanasi said that the Press was very largely owned by the organised corporate sector whose main capital base was a non-publishing business and commercial finance. Underlining the need for improving the standard of journalism particularly when catering to a pluralistic society with so many regional and language problems, Justice Grover said the growing tendency to give overwhelming prominence to political news rather than those concerning various other aspects of human activity should be curbed. What was dished out to the readers even by the leading newspapers does not come up to the standard which obtains in western democracies? He also understood the need to change and raise provisions of the Press and Registration of Books Act which was enacted over hundred years back not with the purpose of encouraging the growth of newspapers but with the intention of keeping the press under check. These provisions need a second look with a view to bringing them in tune with the changed time. Referring to the role of Press Council, he said that the Council was unique of its kind, driving the authority from an Act of Parliament, yet it had no punitive powers. The Council had been designed to function as an impartial arbitrator on issues affecting the free flow of information in general and the Press freedom in particular. It had also to check any abuse of that freedom with a view to maintaining and improving the standards of journalism in the country.

Harijan welfare cells in Karnataka Universities

The Karnataka Legislature committee on the welfare of the scheduled castes and tribes has suggested the creation of special cells in the universities to enforce the implementation of the reservation orders for these classes in the educational institutions. It has also suggested the appointment of special deans in the universities to look after the welfare of the scheduled castes and tribes students. The third report of the committee on reservation and employment of the scheduled castes and tribes and other welfare measures for them has revealed that the reservation for these classes was far from satisfactory and the candidates belonging to these classes were prevented from entering academic services in the universities. Their promotional opportunities were almost nil. Instances have come to the notice of the committee that such candidates having higher qualifications were being dubbed unsuitable for selection and appointment. Proper safeguards should be provided in recruitment rules as well as a high power follow-up machinery for enforcement of reservations. The committee pointed out that not even one Vice-Chancellor from these classes had been there for a number of years in any of the universities in the State. It recommended the creation of Ambedkar Chairs in Political Science in the other State universities as in the Karnatak University.

Department of Kannada in Bombay University

Dr. K. Sgivarama Karanth, an eminent writer and recipient of Bhartiya Jnana Peeth Award, formally inaugurated the Department of Kannada at the University of Bombay. The creation of the department is a result of an understanding between the Government of Karnataka and Maharashtra to have reciprocal chairs of Marathi and Kannada respectively. The chair for Marathi has already come into being in the Karnatak University. In his address, Dr. Karanth complimented the Bombay University for taking a step in the right direction as he felt that it would bring about a better understanding between the people living in the neighbouring States. He emphasised the need for language scholars to adopt a proper approach for making research in their subjects.

Prof. Ram Joshi, Vice-Chancellor of the University, said that the Department of Kannada would serve as an important centre for learning Kannada language and literature. He also announced that the university would soon create a full-fledged Department of Urdu.

Committee to review the functioning of JNU

Considering the fact that the Jawaharlal Nehru University, New Delhi has already functioned for a period of ten years and considering also the desirability of making an assessment of its working during this period with a view to planning its future development in keeping with the objectives of the university, the Executive Council of the university has appointed a Review Committee under the chairmanship of Dr. V.S. Jha, former Vice-Chancellor of Banaras Hindu University. The other members of the committee are : Dr. M.S. Gore, Director, Tata Institute of Social Sciences, Bombay; Prof. M.V. Mathur, Director, National Institute of Educational Planning and Administration, New Delhi; and Dr. M.S. Swaminathan, Secretary, Ministry of Agriculture and Irrigation. Dr. J.N. Kaul, Consultant, National Institute of Educational Planning and Administration will be the Member Secretary and Shri R.P. Puri, Deputy Registrar, JNU, will act as its official Secretary.

The terms of reference of the committee will be as under :

(1) To review the working of the university since its inception in the light of the objectives stated in the First Schedule of the Jawaharlal Nehru University Act;

(2) To assess the achievements of the university in the realisation of these objectives and to suggest steps necessary to consolidate and improve upon them;

(3) To note handicaps, shortcomings and failures in the academic and administrative functioning of the university, to ascertain the reasons thereof and to propose remedies necessary for a more effective functioning of university in future; and

(4) To recommend the lines of growth and development of the university in the next decade consistent with the objectives stated in the JNU Act.

The committee is expected to submit the interim report on question of urgent nature which may be referred to it and the final report would be submitted within a period of one year.

Nayudamma Committee submits reports on IITs

The setting up of a National Screening Committee for examining the proposals for foreign technical assistance to the Indian Institutes of Technology (IIT) and other academic institutions has been recommended by the Nayudamma Committee which has submitted its report to the Union Government.

According to the committee, proposals for foreign technical assistance or collaboration or aid received from the IITs and other academic institutions should not be considered in isola-

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tion but should be examined on the basis of overall national perspectives and in relation to what was happening in other departments and agencies in the country.

It has also suggested that institutions of the same category like the IITs should consult each other and submit to the National Screening Committee coordinated and agreed proposals for foreign technical assistance or collaboration or aid.

The expertise available in the IITs to offer consultancy services should be fully utilised by the Educational Consultancy Company proposed to be set up under the auspices of the Union Government, according to another recommendation of the Committee. The need to establish in the IITs centres for assessment and transfer of technology has been stressed.

The forging of formal linkages by the IITs with other academic institutions, research and development organisations and national laboratories has been recommended by it.

The committee has taken note of a "remarkable increase in the number of research projects undertaken by IITs". At present the projects are done on a no-profit and no-loss basis. The committee has suggested that IITs may be allowed to generate funds from sponsored research programmes on the basis of norms of charges to be laid down by the appropriate authorities. Routine testing jobs in the name of consultancy should not be undertaken by IITs, the committee feels.

Development strategies ought not to be based on simply the availability of massive foreign technical assistance / collaboration aid but the programmes should be used "only on a selective basis for new and emerging areas, for interaction in areas of excellence and for procuring sophisticated equipment not available indigenously." In all cases, the proposals should be based on overall national priorities and commitments, the committee has pointed out.

It has pointed out that foreign technical assistance programme should not be "aimed at replacing existing indigenous endeavours but directed to strengthening and upgrading them."

The terms of reference for the Nayudamma Committee formed in 1978 included : a review and evaluation of foreign technical assistance so far received by IITs; assessment of the capabilities developed in the IITs with such assistance/aid, and identification of areas requiring further development and support through foreign technical aid vis a vis the emerging areas and national perspectives. Other academic institutions were included subsequently in the coverage.

The committee has pointed out that the foreign inputs into other academic institutions other than IITs have been comparatively small and no indepth study in respect of such institutions has been attempted.

The Committee's report is now under the consideration of the Union Government.

The IIT Kharagpur, is the oldest of its kind in India, having been established in 1950. The IITs in Bombay, Madras, Kanpur and Delhi, were established in 1958, 1959, 1960 and 1961.

The foreign component of the equipment received by the respective IITs amounts to nearly Rs. 107 lakhs, Rs. 231 lakhs Rs. 1046 lakhs, Rs. 373 lakhs, and Rs. 623 lakhs, making a total of nearly Rs. 2,380 lakhs. The corresponding Indian capital input (for non-recurring items like land, buildings, equipment, library etc, amounts to nearly Rs. 1258 lakhs, Rs. 907 lakhs, Rs. 1400 lakhs, Rs. 1346 lakhs and Rs. 900 lakhs respectively, making a total of Rs. 5810 lakhs. A foreign technical aid worth Rs. 395 lakhs is also now in the pipeline for all the IITS.

New campus for Calcutta University

The West Bengal Government has decided to hand over 12 acres of land of the Alipore Special Jail to the Calcutta University to build up a new camus of the university. The Chief Minister, Mr. Jyoti Basu, is expected to lay the foundation stone of the new campus at a function to be held some time in April, 1980. Mr. P. Sur, Minister for Urban Development said that initially five acres of land would be utilised for this purpose and the Economics Department would be shifted to the new campus. The Minister said that the new campus of the university would be contiguous to the National Library.

BHU to confer honorary degrees

Mother Teresa is among sixteen people to be awarded a doctorate (honoris causa) at the 61st annual convocation of the Banaras Hindu University. Mother Teresa will be awarded the doctorate for her outstanding contribution in the field of selfless service to suffering humanity.

BHU will be holding the convocation for the first time after a lapse of eight years. Among those to be awarded Mr. J.R.D. Tata, industrialist; Dr. D.S. Kothari, former Chairman, UGC; Mr. Rai Krishna Das, art critic; Pt. Ravi Shankar, Ustad Bismillah Khan, Mrs. M.S. Subbulakshmi, Satyajit Ray and Mr. Maqbool Fida Hussain. Dr K.L. Wig and Mr. M.N. Dastoor will also be awarded Doctor of Science (Hon. Causa) separately by the Medical Institute and the Institute of Technology of BHU.

Nehru Award for five Scientists

Five agricultural scientists have been awarded the Jawaharlal Nehru award for outstanding postgraduate research work in 1979-80. They are: Dr. Baljit Singh and Dr. Manjit Mahal, both of Punjab Agricultural University; Dr. P. Sen of Central Rice Research Institute, Cuttack; Dr. Hari Shankar of Indian Veterinary Research Institute, Izatnagar; and Dr. K.P. Joy, a fisheries scientist.

These scientists will be given a cash award of Rs. 5,000 each and a citation.

Merit grant for St. College

St. John's College, Agra, one of the oldest educational institutions in Uttar Pradesh, has been awarded merit grant of Rs. 10,000 by the State Government this year. The college has earned similar grant for the last eleven years. This grant has been given as a token of appreciation of the good work done and the high academic standards maintained by the college in the past.

Health University for Karnataka

The Karnataka State Health Minister, Mr. Abdul Samad, said in Bangalore that the State would have a health university very soon. The Government had taken informal decision to start the health university from the coming academic year. The Minister said that he would be seeking the permission of the Union Government.

XXVI All India Library Conference held in Delhi

The Twenty-sixth Conference of Indian Library Association was held from March 6 to 9, 1980 at Pragati Maidan, New Delhi, at the time of the IVth World Book Fair. A large number of librarians, publishers, booksellers and book lovers attended the session. The library services for a developing society and the impact of rising prices of books of the development of libraries were the main topics for discussion.

The conference was inaugurated by Justice V.S. Deshpande, Chief Justice of Delhi High Court. Shri K.R. Narayan, Vice-Chancellor, Jawaharlal Nehru University, New Delhi, delivered the keynote address. A souvenir was also brought out on this occasion.

Justice Deshpande in his address highlighted the lack of library facilities in rural areas where 80 per cent of the population lived. He pointed out that it was necessary for the progress and effective functioning of democracy to disseminate knowledge and information by assuring regular supply of books, journals and newspapers to the common man. He said that the contents of these publications should be such as to serve the needs of the people to the maximum. The libraries can discharge an effective role in this direction. A scientific temper had to be created in the people in respect of agriculture, animal husbandry, horticulture and other related items. He was sure that once the number of library units in rural areas became large, small printing presses as domestic industries could also be established and publications could be brought out conveniently in rural areas without much difficulty. These would reflect the local aspirations and grievances of the people and generate discussion and social awareness among the rural masses which will ultimately help in the formation of vigilant public opinion. He said that there was a need in both urban and rural areas for libraries to stock and supply a large number of copies of textbooks, dictionaries and other such material required by the students. He said even he had as a student faced the problem of getting textbooks. He said that the libraries should pay special attention to the needs of women and young children.

Shri K.R. Narayan in his address regretted the cut effected by the University Grants Commission in the library funds. He said that growing materialism coupled with an anti-intellectual wave particularly in politics and higher services were responsible for the lack of interest in gaining more knowledge. He pointed out that a recend survey of libraries had revealed that 70 to 80 of their books had never been taken off the shelves.

He said that the library was a power house of ideas. Even Karl Marx conceived his concept of a world revolution in the dim light of the British Museum library. Mao too had spent hours in the Beijing (Peking) library and went a step further by falling in love with the librarian's daughter and marrying her. He said that reading was a creative exercise, an interaction between the mind and the thoughts, ideas and passions expressed in the cold print of books. He decried the lack of publications in Indian languages.

Shri P.V. Narasimha Rao Union Minister of External Affairs in a written message to the conference said that the urgent need of the hour was service to the rural areas and libraries should maintain a vital link with our schemes for adult education and non-formal education.

About thirty-five papers were presented by the delegates coming from the various parts of the country. Dr. Amrik Singh, Secretary, Association of Indian Universities, Mr. M.N. Nagraj, Deputy Librarian, National Library, Calcutta and Dr. Malcolm Adiseshiah MP, were among those who participated in the deliberations of the conference.

The conference while discussing the impact of rising prices of books on the development of libraries suggested that a formula be evolved by which library authorities or fund giving bodies should agree to augment the year to year book budgets in direct proportion to the rise in the prices of books. In other words, library budgets should be directly linked with the cost of production of books and prevailing prices. It was also unanimously agreed that a national forum be set up where publishers, booksellers, librarians and other readers could meet to discuss their problems relating to books production, quality of books, availability of paper and subject matter of new books. It was pointed out that the national book development council set up by the government had not met even once and the absence of a national policy also seriously affected the growth and development of a library system.

The rise in book prices was a

matter which concerned all library managers, irrespective of the fact whether they managed college, university, public, technical or special libraries. It was necessary to provide information about book prices so that the librarians could plan their budget accordingly. During recent years there has been a marked reduction in the outlay of higher education and library grants in universities and colleges. This trend had to be checked in the interest of developing libraries and providing better facilities to the students.

On behalf of the publishers, Mr. O.P. Ghai of the Federation of Indian Publishers pointed out that publishers could also not get any loans or financial assistance from the banks or other institutions. Book publishing, he said, was considered to be an unproductive activity and that is why adequate financial assistance was not being provided for it. The cost of producing books can be reduced considerably if the publishers made use of the letter press instead of other costlier methods of printing. Efforts should also be made to procure good quality paper at regulated prices in order to check rise in book production.

Workshop on computer techniques in Information Processing

A six day Workshop on the aforesaid topic organized by the Department of Library Science, University of Delhi, with the financial assistance from Department of Science & Technology, Government of India, was inaugurated by Prof. U.N. Singh, the acting Vice-Chancellor, University of Delhi, at 10.30 A.M. in the Tagore Hall, Tutorial Building, University of Delhi. The inaugural function was attended by about 150 people including participants, academicians, prominent library and information scientists from various parts of the country. About 25 participants are attending the Workshop representing various institutions, libraries and library schools and computer centres, from all over India.

The programme of the Workshop includes about 15 lectures and 3 panel discussions and 3 visits to computer and information centres in Delhi. The lectures and panel discussions will include various topics pertaining to application of computer techniques, their utilization, systems techniques, various methods of computer programming and languages, computer application at national and international levels, Government policy regarding application and use of computers in India and financial implications. The prominent lecturers have been invited who have specialised in the various topics to be covered.

While inaugurating the Workshop, Professor U.N. Singh outlined the objectives of University education, traditional techniques of communication of information, origin of writing and printing and stressed that the modern techniques including computers have come to the rescue of information scientists who have to control the unlimited flow of information in various branches of knowledge. He also stressed that such a Workshop would prove to be a boon to the working information scientists and teachers and such a programme should have been organized much earlier. However, he was highly appreciative of the efforts made by the Department of Library Science and for the financial assistance provided by the Department of Science & Technology, Government of India.

Dr. B.M. Bhatia, Principal, Hindu College and a prominent economist, was highly appreciative of the need for more mechanical devices to be supplied by the modern librarians for collection, storage and dissemination of required data and information in science and technology and in social sciences as well. He further stressed that the present day libraries especially in social sciences, find it very difficult to handle the modern flow of information in the social sciences without the use of computers. He further stressed that such programmes are not only highly academic but useful for the economic development of the nation as a whole.

BITS celebrates International Women's Day

The Community Welfare Unit of Birla Institute of Technology and Science, Pilani organised a function on 8 March, 1980 to celebrate the International Women's Day. The occasion was also used to eulogize the services rendered for the emancipation of Indian women by the renowned poetess, Smt. Sarojini Naidu, whose birth anniversary fell recently. Besides a message from Dr. C.R. Mitra, Director and short speeches on her life and poetry by Smt. Pushpa Bhargava and Smt. Meera Banerji, a number of her well-known poems were recited by students and faculty members. In her Presidential remarks Dr. (Smt.) Sandhya Mitra referred to the important role Indian women had played in Freedom Movement and to the contribution they had made for the progress of the country after Independence. She advised women to cultivate 'inner beauty' and gave the example of Smt. Naidu "who had charmed her way through life."

Personal

1. **Shri Girish Chandra Chaturvedi has taken over as Vice-Chancellor of Gorakhpur University.**
2. **Dr Kartar Singh Chela has joined as Director of Extension Education of Punjab Agricultural University in place of Dr J.C. Bakshi who has left to take up his new assignment with the Food and Agriculture Organisation (F.A.O.).**

ICAR organises Summer Institutes

The Indian Council of Agricultural Research will be holding 23 summer institutes in the various agricultural science during the summer vacations 1980 for the benefit of teachers, research workers and extension workers particularly the subject matter specialists. The main objective of this inservice training course would be to communicate the latest technological advances in the subject and provide the necessary orientation to teachers and research workers of agriculture/agricultural engineering/animal sicence home science/fisheries so that they are able to relate the teaching of their subject to the problems in their respective subject. The Council would be willing to accommodate one or two from the sponsored list of teachers, researchers and extension specialists from universities/colleges/institutes/departments who are actively engaged in teaching/research or extension education in the respective subjects. Sponsored candidates should not however be over 45 years of age on July 1, 1980.

The details of the summer institutes proposed to be organised are given as under :

ANNEXURE I

S. No.	Topic	Name of the Director	Location	Date of Summer Institute	Eligibility qualification
1.	Forage crop improvement and pasture management	Dr. A.K. Sanghi Research Scientist, Head of the Division, Forage Research Project, GAU, Anand	Anand Campus B.A. College of Agri. GAU, Anand-388110	12th May to 10th June, 1980	M.Sc. in Plant Breeding and Genetics/Agronomy having two years experience of teaching/research or Ph.D. in Plant Breeding / Genetics / Agronomy. Research publication in the field of specialisation will be an additional qualification.
2.	Advanced Technology of potato production storage and utilization	Dr. B.B. Nagaich Director, CPRI Simla	Central Potato Res. Institute Simla-171001.	2nd June to 30th June, 1980.	M.Sc. (Ag.) with at least two years experience of research/teaching/extension in potato production.
3.	Weed Management in cropping systems	Dr. U.C. Upadhyay Dean, Agril.	Marathwada Agricultural University, Parbhani-431202	19th May to 10th June, 1980	Post-graduate in agronomy with two years experience of teaching or research work in weed management.
4.	Management of zones in India	Dr. R.P. Singh Chief Scientist CAZRI	Central Arid Zone Research Institute, Jodhpur-342001	28th April to 27th May, 1980	Post-graduate degree in any branch of agriculture science with minimum of 3 years experience of teaching/research/extension. Preference will be given to candidates who are directly associated with teaching/research/extension on problems relating to development of arid region.
5.	Techniques for collection, maintenance and conservation of germplasm and collection of agricultural/horticultural plants	Dr. K.L. Mehra, Director, N.B.P.G.R., FCI Building, New Delhi-110012	National Bureau of Plant Genetic Resources, New Delhi-110012	12th May to 10th June, 1980	M.Sc. in Agricultural Botany with specialisation in plant breeding and genetics and economic Botany/Texonomy.

S. No.	Topic	Name of the Director	Location	Date of Summer Institute	Eligibility qualification
6.	Techniques in Soil fertility evaluation	Dr. N.G. Parur, Director of Instruction (Agri.). Agri. College, Hebbal, Bangalore-560024	Deptt. of Chemistry and Soil, UAS, Bangalore 560024	5th May to 3rd June, 1980	Post-graduate qualification in soil science/agronomy or other branches of related fields with two years professional experience in soil fertility evaluation.
7.	Use of Radio-isotopes in plant physiology	Dr. D. Sharma Prof. College of of Basic Science and Humanities	College of Basic Sciences & Humanity, G.B. Pant University of Agril. & Technology, Pantnagar-263145	To be announced later	Post-graduate qualification in any branch of agriculture with two years experience in use of radio isotopes
8.	Management of Soil borne diseases	Dr. R.S. Singh Prof. & Head Deptt. of Plant Pathology	Deptt. of Plant Pathology, G.B. Pant University of Agri. & Technology, 263145 Pantnagar	16th June to 15th July, 1980	Under-graduate or Postgraudate teachers, research workers with M.Sc. Agriculture in Plant Pathology or related field. At least two years experience in teaching/research.
9.	Recent advances in Soil Clay minerology	Dr. G.S.R. Krishnamurthi, Head Physics Division, I.A.R.I.	Agril. Physics Division, IARI, New Delhi-110012	6th May to 5th June, 1980	M.Sc. in Soil Science with at least 3 years experience in the field of soil clay minerology preferably Ph.D. in soil science.
10.	Phyto-pathological techniques/teaching methods in plant pathology	Dr. J.N. Chand, Prof. & Head Faculty of Agril. Dept. of Plant Pathology. HAU, Hissar.	Faculty of Agriculture Deptt. of Plant Pathology, HAU, Hissar-125004	5th June to 2nd July, 1980	M.Sc./M.Sc. (Ag.) in Plant Pathology with at least two years experience in teaching, research, extension in any branch of the Plant Pathology.
11.	Restructuring of Extension teaching for integrated rural development and recognised extension system	Dr. K.N. Singh Director Co-Director Dr. S.N. Singh	Agricultural Extension Division, IARI, New Delhi-110012	14th May to 3rd June, 1980	Assistant Professor or Extension Education/Rural Sociology/Home Science extension/educational psychology. Teaching/research of at least five years in the subject mentioned above. Field experience in extension of at least two years desirable.
12.	Integration of research in the area of home science planning implementation and evaluation	Dr. (Mrs.) P. Pushpamma, Dean, Home Sciences, APAU, Hyderabad	College of Home Science APAU, Hyderabad-500030	15th May to 15th June, 1980	M.Sc. (Home Science) or staff of Home Science colleges. Qualification may be relaxed to B.Sc. Home Science with exceptional good teaching/research/extension experience in home science of minimum 5 years.
13.	Post Management in Cereals, millets and pulses.	Dr. B.H. Krishnamurthy Rao, A.P.A.U. Hyderabad.	College of Agril. Rajendranagar Hyderabad-500030	13th May to 6th June, 1980	Post-graduate qualification in entomology and related field with two years research/teaching/extension work in the field of entomology.

S. No.	Topic	Name of the Director	Location	Date of Summer Institute	Eligibility qualification
14.	Advanced Statistical methodology, as applied to animal sciences.	Dr. K.C. Raut, Head, Division of Statistical Research.	IASRI, Library Avenue, New Delhi-110012	6th May to 4th June, 1980	Master's degree in agriculture statistics or equivalent qualification from a university or recognised institute or master's degree in mathematics with statistics followed by one year professional course in statistics of a recognised institute in agricultural statistics of the IASRI. At least 3 years experience in teaching statistical techniques as applied to animal science or handling survey / experimental data on animal sciences.
15.	Quail Production Management and Marketing	Dr. B. Panda, Officer on Special Duties, CARI, Izatnagar	Central Avian Research Instt., Izatnagar-243122	1st May to 30th May, 1980	M.V.Sc. or M.Sc. in Biology science or M.V.Sc./M.Sc. in animal husbandry/animal sciences with at least two years experience in teaching or research in poultry production.
16.	Buffalo Management System	Dr. R.N. Pal, Prof. Deptt. of LPM & Dean P.G. Studies, Hissar	Deptt. of Livestock Production and Management, Hissar-125004.	2nd June to 30th June, 1980	Teaching/research/extn. workers in the Department of livestock production and management/ dairy husbandry/animal husbandry with Master's degree in the subject.
17.	Dairy Economics	Shri Kuber Ram Head, Economics Dvn. NDRI, Karnal	Economics Division NDRI, Karnal (Haryana)	2nd June to 30th June, 1980	M.Sc. in Dairy Economics, M.Sc. Agri. Economics/M.A. in Economics with specialisation in agricultural/dairy economics or any other equivalent qualification. Experience of teaching and research in the field of dairy/ agricultural economics.
18.	Production Diseases with special reference to Ruman Dysfunctions in bovines	Dr. S.K. Misra, Prof. & Head, Deptt. of Veterinary Medicine, PAU, Ludhiana	College of Vaterinary Science, PAU, Ludhiana	14th July to 28th July, 1980	Teachers having M.V.Sc and M.Sc. degree in veterinary medicines.
19.	Recent advances in drying and dehyderation of food products	Dr. B.P.N. Singh Prof. of Agril. Engg., G.B. Pant University of Agri. & Technology, Pantnagar	G.B. Pant University of Agri. & Technology Pantnagar-U.P. 263145	9th June to 28th June, 1980	Degree in any discipline of engineering or M.Sc. Food Technology with two years experience related to teaching/research or industry in the area of food product processing.
20.	Role of physiology in animal production	Dr. N. K. Bhattacharya Head of the Division, Physiology & Climatology, IVRI Izatnagar	IVRI, Izatnagar U.P. 243122	5th May to 3rd June, 1980	In service teachers/researchers with the qualification of M.V.Sc. in Animal Physiology / Animal nutrition/livestock / production/ animal production animal bio-chemistry.

S. No.	Topic	Name of the Director	Location	Date of Summer Institute	Eligibility qualification
21.	Prevention & Control of Genetics infection of cattle, buffalo, sheep & goat	DR. R. C. Pathak, Prof. & Head Deptt. of Bacteriology College of Veterinary Science and Animal Husbandry (C.S.A.U. & T. Kanpur) Mathura Campus Mathura	Chandra Sekhar Azad Univ. of Agri. & Technology Mathura Campus Mathura U.P.	15th June to 15th July, 1980	M.V.Sc in the subject of veterinary bacteriology verterinary pathology, veterinary gynaecology or veterinary medicines, with experience in related field.
22.	Culture of edible molluses	Sh. K. Nagappan Nayar, Sr. Scientist & Officer-in-Charge Tuticorin Res. Centre IMFRI, Cochin	Tuticorin Research Centre, CMFRI, 93 North Beach Road, Tuticorin-622000.	26th May to 24th June, 1980	M.Sc. in Zoology with specialisation in fisheries with two years experience.
23.	Brackish water capture & culture fisheries	Dr. A. V. Natrajan Director (Offtg.)	CIFRI, Barrackpore 24-Parganas (WB) 743101	3rd July to 2nd August, 1980	M.Sc. in Zoology or equivalent qualification with fishery biology / aqua - culture / fish and fisheries as special paper and two years experience in teaching/research in selected fields.

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THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Bhupinder Singh. Tribal leadership in Orissa. Utkal University.

Psychology

1. Asha, C.B. An empirical study of the adjustment problems of creative children in secondary schools. University of Kerala.

2. Nagpal, Ashok. Effectiveness of punishment procedure indiscrimination learning process of the mentally retarded and its relation to some personality aspects. University of Delhi.

3. Sharma, Satish Chandra. Correlates of creative functioning in high and low caste groups. Meerut University.

4. Singh, Lal Amrendra. Bhartiya manovigyan kee siddhantik pristhabhoomi. (Hindi). Avadh University.

Sociology

1. Biswas, Ajoy Kumar. Role of leadership in technological change: A sociological case study of a rural region in West Bengal. University of Kalyani.

2. George, Mollykutty. A study of the influence of modernisation on fertility of urban women. University of Kerala.

3. Jaiswal, Rajendra. Shikshit yuvkon ka adhunikkaran: Poorbi Uttar Pradesh ke chuney gaye prakhandon ka ek samaj manovaigyanik adhyayan ((Hindi). Avadh University.

4. Kachole, Dadarao Dhondiba. Mang community in transition. Marathwada University.

5. Misra, P.S. Changing patterns of village families: A sociological analysis. University of Gorakhpur.

6. Nagaraj Rao, Ratna. Social organisation in an Indian slum. University of Poona.

7. Roy, Subhransu Kumar. A sociological study of the factors affecting human satisfaction in industries. University of Kalyani.

8. Vishvanathan, Siva Prasad. Scientists in organization. University of Delhi.

9. Vyas, Kailashnath Indernath. Tribals in non-tribal setting: A sociological study of tribals in an urban community. South Gujarat University.

Political Science

1. Alexander, P.J. Police administration in Kerala: A developmental approach. University of Kerala.

2. Asthana, Sant Prasad. The Prime Minister of India: A constitutional and political study. University of Gorakhpur.

3. Auti, Vidyadhar Bhaskar. A comparative study of urban and rural political participation: An empirical study of local communities in Maharashtra. Shivaji University.

4. Barooah, Dipti Prasad. Administration of community development and Panchayati Raj in the Darrang District. Gauhati University.

5. Bhagdikar, Krishan Khanderao. Administrative policies of King Bhoja Paramara with special reference to his Yuktikalpataru. Nagpur University.

6. Datye, Sunil Narayan. Politics in Marathwada: A study of political development from 1948-72. University of Poona.

7. Haranath, Vadrevu Sree Kusuma. The Supreme Court of India 1950-73: An empirical analysis of judicial behaviour. Andhra University.

8. Jadhav, Jeevaji Basavantrao. Functioning of financial committees of Maharashtra Legislature. Shivaji University.

9. Pandey, Babu Ram. Bangla Desh ka muktee sangharsh 1971: Ek bhoo stratijiya evam rajnaitak adhyayan (Hindi). Avadh University.

10. Sen, Uttam. Centre-state financial relations in India with special reference to West Bengal. University of Calcutta.

11. Sharma, Urmila. Samakaleen Bharatiya rajnitik chintan mein manavvad: Ek samikshatmak vivechan Shri Aurobindo se Nehru tak. (Hindi). Meerut University.

12. Veena Kumari. Socialist ideology and programmes of the Indian National Congress. Meerut University.

Economics

1. Bandyopadhyay, Shibdas. Some economic aspects of paddy cultivation in West Bengal. University of Kalyani.

2. Bhatia, Satya Paul. Land reforms in India: A comparative study. Meerut University.

3. Gupta, Vipin Chandra. Role of small scale industry in industrial development of U.P. since 1951. Kanpur University.

4. Gyanendra Kumar. Demographic factors and economic growth : A case study of India. Meerut University.

5. Jadhav, Ramesh Keshavrao. Scheduled castes in Maharashtra: A study in their socio-economic disabilities. Shivaji University.

6. Satyanarayan, Timmaraju Malati. A study of the transport equipment industries in India, 1951-77. University of Poona.

7. Singh, Kiran. Trends in industrial concentration in India and policy implications. University of Delhi.

8. Singh, Satya Bir. Role of Life Insurance Corporation in the economic growth of India. Meerut University.

Education

1. Ahmad, Sultana. An empirical study of the effect of socio-cultural disadvantage on intellectual growth among Eastern U.P. students. University of Gorakhpur.

2. Dwivedi, Mahabal. A study on the attitudes of students, parents and teachers towards the current system of higher education. University of Gorakhpur.

3. Ghosh, Nani Gopal. Distribution of four social values among certain selected strata of youths and prediction of good citizenship with the help of the values. University of Kalyani.

4. Joshi, Shriniwas Diwakar. Educational problems of the scheduled castes and scheduled tribes of Baroda District. M.S. University of Baroda.

5. Kadiyal, Ramchandra Anant. A critical study of the contribution of Karmaveer Dr. Bhaurao Patil to the educational thought, practices and development of education in the State of Maharashtra . Shivaji University.

6. Latkar, Shakuntala Chintamani. Basic vocabulary in Marathi of pupils in Standard Seven. University of Poona.

7. Misra, K.N. A study of the educational system during the Upanishadic age of India. University of Gorakhpur.

8. Pachauri, Girish Chandra. A study of the relative effectiveness of different styles of programmed learning in Hindi grammar. Meerut University.

9. Sharma, Brijkishore. A study of certain aspects of verbal and non-verbal behaviours of science teachers on the micro and macro-teaching situations using interaction analysis. Avadh University.

10. Shyam Kumari. Problems of women education and their impact on its progress in East U.P. at the secondary level since 1947. University of Gorakhpur.

11. Singh, Ram Deo. Stimulated social skill training and

modification of teacher class-room behaviour. University of Gorakhpur.

12. Sivadasan, K.R. Group behaviour of pupils and the attainment of educational objectives in secondary schools. University of Kerala.

13. Vidyarthi, Shankar Lal. A study of the problems of retired primary and higher secondary school teachers of Basti District, 1960-75. University of Gorakhpur.

14. Yeli, Rudramuni Shivayogeppa. A critical study of pre-primary education in Karnatak. Karnatak University

Commerce

1. Kulkarni, Sharad Digamber. Working and problems of passenger road transport in Maharashtra. University of Poona.

2. Misra, Radha Nath. Problems of rural industrialization in the small scale sector in Orissa : A study of Panchayat Samiti industries. Karnatak University.

3. Paila, Subba Rao. A study of personnel, union management relations in Shri Shahu Chhatrapati Mills: A government of Maharashtra Undertaking, Kolhapur. Shivaji University.

4. Panda, Ghana Shyam. Working capital in small manufacturing companies in Orissa. Sambalpur University.

5. Shetti, Chintaman Shankar. Operations of the Unit Trust of India, 1964-65 to 1973-74. University of Poona.

6. Sushil Kumar. Human relations in the private sector: A case study of Modi Spinning and Weaving Mills Co. Ltd. Meerut University.

HUMANITIES

Philosophy

1. Donald, J. Robert. Philosophical perspectives of humanistic psychology. University of Poona.

2. Padhi, Narayan Chandra. Doctrine of Karma. Utkal University.

3. Pande, Krantiprabha Purushottam. Critical examination of Kant's aesthetics with reference to beautiful. University of Poona.

Religion

1. Faruqi, Imadul Hasan Azad. The Tarjumanal Quaran: A critical analysis of Maulana Abul Kalam Azad approach to the understanding of the Quaran. Jamia Millia Islamia.

Linguistics

1. Gandhe, Vasudha Sudhakar. Semantics of words denoting four-footed (Domestic) animals in Vedic. University of Poona.

2. Paigaonkar, Aruna. Use of mass media for second language teaching in India with special reference to radio and television. University of Poona.

Literature

English

1. Dani, Ashok Pandurang. Dryden's tragicomedies. University of Poona.

2. Ishakali, Shabbir Hussain. An investigation into the reading efficiency in English of students of standard XI in Aurangabad City and measures to improve it. Marathwada University.

3. Ramakrishna, D. Craft of Poe's tales. Kakatiya University.

4. Sharma, Kaushal Kishore. Theories of the English novel since 1914: D.H. Lawrence, Virginia Woolf, E.M. Forester, Somerset Maugham and Joyce Cary D. Litt. Meerut University.

5. Sharma, Vinod Bala. Prefaces of Bernard Shaw: An evaluation. Meerut University.

German

1. Karnick, Kamal Kashinath. Bonsels' Indienbezogene Werke. University of Poona.

Sanskrit

1. Abe, Join. A study on the first and second chapters of the Visuddhimagga and its commentaries. University of Poona.

2. Awasthi, Krishan Kumar. Jagdish Bhatt kee shabd shakti prakashika: Ek adhyayan. Kanpur University.

3. Bhat, V.M. Purushottamdevni laghuparibhasha vruttinu vivechanatmak adhyayan. Gujarat University.

4. Chakrawarti, Shanti. Dharamsutron mein jiwan evam naitik mulyon ka adhyayan. University of Gorakhpur.

5. Dei, Ram Janki. Vedon mein som-sukt. University of Gorakhpur.

6. Deshpande, Mandakini Ramchandra. Puran saraswatiyancha tikancha chakitsik abhyas. University of Poona.

7. Dwivedi, Vishwambhar Nath. Gita kee vividh vyakhyaon kee aitihasik evam tulnatmak samiksha: Shankar, Ramanuj, Tilak, Gandhi, Vinoba evam Radhakrishnan ke vicharon ka vishesh adhyayan. Kanpur University.

8. Kshatri, Kiran Lata. Prakriya Komudi tatha Siddhant Komudi ka tulnatmak adhyayan. Kanpur University.

9. Pandya, H.U. Jain sammat Ghancharcha Visheshtahmatay-Giri krut nandi tikane adhare. Gujarat University.

10. Patel, J. S. Vadibhsinh Surikrut Gadya Chintamani: Vivechanatmak adhyayan. Gujarat University.

11. Rai, Vibhuti Narain. Sanskrit ke prakaranon ka tulnatmak adhyayan. University of Gorakhpur.

12. Shukla, Kapil Deo. Aapastamb Shrot Sutra ka alochanatmak adhyayan. University of Gorakhpur.

13. Sneh Lata. Mandormanjari ka alochanatmak evam tulnatmak adhyayan. Meerut University.

14. Tripathi, Ramhit. Varahshrot Sutra ka parisheelan. University of Gorakhpur.

15. Tripathi, Vishal Prasad. The concept of Maya in Kashmiri Shaivism and Vedanta. University of Delhi.

16. Vechalekar, Arundhati Madhav. A critical study of the Chandogyopanishad. University of Poona.

Hindi

1. Awasthi, Promila. Biswin shatabdi ke Hindi Ramkavya kee sanskritik prishtbhoomi. Kanpur University.

2. Bajpai, Vijay Shankar. Gwalior zile kee boli ke sanrachnatmak gathan ka shastriya adhyayan. Kanpur University.

3. Bhatt, V.M. Swami Navrang aur unka sahitya. Saurashtra University.

4. Bimla Devi. Ritikaleen ritimukt kavya mein samajik chetana. University of Delhi.

5. Bisht, Sher Singh. Hindi Krishan kavya kee darshnik prishthbhoomi, san 1400 se 1600 tak. Kumaun University.

6. Chaudhari, Tejpalsingh Jaising. Khari Boli ka vyakarnik vishleshan. University of Poona.

7. Dhamija, Rajendra Kumar. Swatantaryottar Hindi natak ka shilp vidhan. Meerut University.

8. Dubey, Jagdamba Prasad. Sridhar Pathak: Ek mulyankan. Avadh University.

9. Gupta, Mitresh Kumar. Prasadottar aitihasik natakon ka adhyayan. Meerut University.

10. Gupta, Sadanand. Kalyan Sampadak: Shri Hanuman Prasad Poddar. University of Gorakhpur.

11. Irshad Ali. Purvanchal ke muslim lokgeeton ka adhyayan. University of Gorakhpur.

12. Janardan. Madhyakaleen Hindi sahitya ka itihas lekhan: Ek punarmulyankan. University of Gorakhpur.

13. Kakare, Satish Janardan. Vyakti aur samaj ke parasparik sambandhon ke sandarbh mein Amritlal Nagar ke upanyason ka anusheelan. Ravishankar University.

14. Kapil, Surendra. Mahakavi G. Kankar Kurup krit Okkawal (Malyalam) evam Mahakavi Sumitranandan Pant krit Chidambara (Hindi) ka tulnatmak adhyayan. Meerut University.

15. Karunakaran, K. A comparative study of folk poetry in Hindi and Malayalam literature. University of Cochin.

16. Kazi, Mohammed Husain. Dakhini Hindi ke shokgeet. University of Poona.

17. Mishra, Kailash Nath. Hindi kee anusandhan padhatiyon ka vaigyanik adhyayan. Kanpur University.

18. Mishra, Ramashankar. Nai kavita evam naye geet kavya ka tulnatmak vivechan: Vastu aur shilee shilp kee drishti se. Kanpur University.

19. Misra, Vindhyachal. Hindi ke Sudamacharit kavya: Ek vivechanatmak adhyayan. University of Gorakhpur.

20. Nigam, Pratibha. Bareli janpad ke lokgeeton mein sahitya ka swarup. Kanpur University.

21. Paliwal, Hradayesh Kumar. Hindi alochana aur manovishleshan. University of Delhi.

22. Pandey, Ram Bodh. Uttar Madhyayugeen sant sahitya 17th-18th A.D. mein Madhura bhakti ke tatwa. Avadh University.

23. Pandey, Suresh Chandra. Agyeya sahitya ke pashchatya prena strot. Meerut University.

24. Puranik, Vinod Pandharinath. Hindi sahitya ko Saraswati kee den, 1900-1920. University of Poona.

25. Randheer Singh. Chandayan ke lok prachalit evam sahityik katha rupon ka tulnatmak adhyayan. University of Gorakhpur.

26. Ransubhe, Suryanarayan Manikrao. Vibhajan aur Hindi katha sahitya . Marathwada University.

27. Saxena, Chitra. Ritikaleen Hindi kavita kee lok sangrahi bhoomika. Kanpur University.

28. Sethi, Jai Gopal. Shri Jagannath Prasad Milind ke sahitya mein vyakt rashtriya bhavana. Meerut University.

29. Sharma, Gita. Premchandottar Hindi upanyason per kavita ka prabhav. University of Delhi.

30. Sharma, Lalit Hari. Shabdavali ayog ke vaigyanik shabdavali ka adhyayan. Kumaun University.

31. Sharma, Onkar Prasad. Mohan Rakesh tatha Balwant Gargi kee natyakala ka tulnatmak adhyayan. Meerut University.

32. Sharma, Ramnath Ghurelal. Yugeen pariprekshya mein Kabir aur Akha ke kavya mein abhivyakt vichardhara ka tulnatmak adhyayan. M.S. University of Baroda.

33. Sharma, Shiv Shanker. Auchitya kavya siddhant ka manovaigyanik parisheelan. *D. Litt.* Kumaun University.

34. Shrivastava, Sudha. Mahadevi ke kavya mein bimbvidhan. Gujarat University.

35. Singh, Anirudh. Mahatma Banadas virachit Brahmayan granthon ka darshanik evam sahityik anusheelan. University of Gorakhpur.

36. Singh, Asha. Hindi mein Marxvadi alochana ka vikas. University of Gorakhpur.

37. Singh, Ram Sudhar. Nai kavita ke vikas mein lambi kavitaon kee bhoomika. University of Gorakhpur.

38. Singh, Sachchida Nand. Sathottar Hindi prabandh kavyon mein nayak kee parikalpana. University of Gorakhpur.

39. Singh, Udai Pratap. Aapa Sahib aur unkee kritiyan. University of Gorakhpur.

40. Sinha, Neelam. Sur sahitya per samikshatmak evam shodhakarya ka vivechanatmak anusheelan. Kanpur University.

41. Sinha, Sheela. Prasad ke natakon ka manovaigyanik adhyayan. Meerut University.

42. Srivastava, Asha. Hindi sahitya kee nirgunopasika kaviyatariyan. University of Gorakhpur.

43. Srivastava, Kanchan. Prabandh mulak Hindi Ramkavya mein Kaikayee, Kaushalya aur Sumitra ka charitrik vikas. Kumaun University.

44. Srivastava, Meena. Adhunik Hindi kavya mein natya tatwa. University of Gorakhpur.

45. Srivastava, Pushpalata. Hindi kavita mein mukt chand ka vikas. University of Gorakhpur.

46. Srivastava, Sneh Lata. 1935 ke bad Hindi natak kee naveen dishayen. University of Gorakhpur.

47. Tewari, Arjun. Purvi Uttar Pradesh mein Hindi patrakarita ka udbhawa aur vikas. University of Gorakhpur.

Urdu

1. Zaki, Sadiqa. Mohd. Mujeeb: Hayat aur Urdu khidmat. Jamia Millia Islamia.

Marathi

1. Apate, Lubdha Balwantrao. Mahatma Phule : Sam chintak ani vangmayeen karya. Shivaji University.

2. Damodar, Joshi Suresh. An exploratory study the modern Marathi prose style with special reference to t prose in eassy, drama, novel etc. in the period 1850-192 Karnatak University.

3. Deshpande, Krishnarao Pandharinath. Mahanubh yanchya sati granthcha chikitsik abhyas. University of Poon

4. Dongre, Vinaya Vijay. Dvitiya mahayudhottar Marat Kadambri: Swarup ani chikitsa. University of Poona.

5. Mancharkar, Ratnakar Bapurao. Kavivarya Mu teshwar: Vangmayeen abhayas. Shivaji University.

Bengali

1. Mukhopadhyay, Bimalkumar. Sahitya Tatwa sam ksha. University of Calcutta.

2. Nandi, Ratan Kumar. Kartabhaja: Dharma-O-sahity University of Kalyani.

3. Sarkar, Diptimoy. Origin and perspective of villag folks in the novels of Bibhutibhushan. North Bengal Un versity.

Gujarati

1. Parekh, A.J. Darshak Manubhai Pancholi: Th creator and the thinker based on his work upto 1973. Saurash tra University.

Tamil

1. Parthasarathi, R. Vaishnavism in Tamil literatur between the 7th and 9th centuries. University of Delhi.

Telugu

1. Narasimha Murty, Upadhyayula Appala. The theor of Auchitya and its application to Surana's poetry. Andhr University.

Fine Arts

1. Benerji, Bani Rajendranath. Dhrupad gayen shail ka aitihasik vivechan. (Hindi). Nagpur University.

Geography

1. Banerjee, Sandhya. Problems of land use and urba development in Simla. Kanpur University.

2. Sharma, Arunima. Post independence changes in the morphology of Moradabad: A study in urban geography. Kumaun University.

3. Tripathi, Ram Lotan. Natural resources and prospects of industrial development in Bundelkhand Region of U.P. Kanpur University.

History

1. Arora, Ashok Kumar. Rajput-Maratha relations from 1707 to 1760 A.D. University of Poona.

2. Gavali, Papa Aba. Society and social disabilities under the Peshwas. Shivaji University.

3. Gayatri Devi. British Parliament aur Bharatiya swatantrata sangram, 1919-1937 (Hindi). Kanpur University.

4. Momin, Kamarali Noormohmed. Archaeology of Kheda District, Gujarat upto 1300 A.D. M.S. University of Baroda.

5. Pandey, Ajai Kumar. Study of labourers in early medieval India from 800 A.D. upto 1300 A.D. Avadh University.

6. Rao, Virendra Bahadur. Political history of Malwa, c. 550-1305. Gorakhpur University.

7. Shrikhande, Kamleskar Vinayak. Karveer Chhatarpati dusre Shivaji yancha kalateel rajkiya, samajik va arthik jiwanacha abhyas. (Marathi). University of Poona.

8. Singh, Narendra Kumar. Jai Prakash Narayan aur Bharatiya samajvadi andolan (Hindi). Meerut University.

9. Sonawane, Vishwasrao Hanamantrao. Archaeology of the Panchmahals upto 1484 A. D. M. S. University of Baroda.

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-67

dvertisement No. Aca. III/2/80

Applications are invited for the ollowing posts :—

. SCHOOL OF LANGUAGES :

Centre of African & Asian Languages :

. Assistant Professor in Arabic

Qualifications :

Essential :

(a) Consistently good academic record with at least a high second class Master's degree in Arabic or its equivalent qualification from an Indian/foreign University;

(b) A doctor's degree or published work of an equally high standard.

Specialisation required :

Arabic Language & Literature.

Desirable :

Ability to teach translation and interpretation from Arabic to English and vice-versa at the M.A. level.

CENTRE OF GERMAN STUDIES :

2. Assistant Professor in German : (temporary against leave vacancy for about one year)

Qualifications :

(a) Consistently good academic record with at least a high second class Master's degree in German or its equivalent qualification from an Indian/foreign University; and

(b) A doctor's degree or published work of an equally high standard.

II. SCHOOL OF SOCIAL SCIENCES :

Centre of Social Medicine & Community Health

3. Assistant Professor in Social Sciences :

Qualifications : Essential

(a) Consistently good academic record, with at least a high second class Master's degree in Cultural Anthropology, Sociology, or Psychology, or its equivalent qualification from an Indian/foreign University; and

(b) A doctor's degree or published work of an equally high standard.

Desirable :

(a) A degree in Community Health; and

(b) Five years' research experience in Community Health.

III. SCHOOL OF COMPUTER & SYSTEMS SCIENCES

4. Assistant Professor

Qualifications : Essential

(a) Consistently good academic record with at least a High second class Masters' Degree in the appropriate discipline or an equivalent qualification from an Indian/Foreign University.

(b) A doctor's degree or published work of an equally high standard.

Area of Specialisation : Systems Programming

Desirable :

Some teaching experience; post doctoral research experience.

Provided that in the case of Assistant Professors if the Selection Committees are of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

Provided further if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

IV. SCHOOL OF INTERNATIONAL STUDIES :

CENTRE OF AMERICAN AND WEST EUROPEAN STUDIES :

5. Associate Professor/Fellow

Qualifications : Essential

(a) Consistently good academic record with at least a high 2nd class Master's degree in Political Science or History or its equivalent qualification from an Indian/Foreign University;

(b) A doctor's degree or published work of an equally high standard in the field of American Studies.

(c) About five years' experience of teaching and/or research in the field of American Studies.

Desirable :

Should be able to guide research in areas of Black Studies/20th Century American History/US Foreign Policy.

V. SCHOOL OF COMPUTER & SYSTEMS SCIENCES :

6. Key Punch Operators—two (one reserved for Scheduled Caste candidate)

Qualifications : Essential

Higher Secondary/Matriculation, experience in operating Electric Key Punching Machine (Numerical and Alphanumerical) and knowledge of handling Computer Input / Output work.

SCALES OF PAY :

1. Associate Professor/Fellow : Rs. 1200-50-1300-60-1900.
2. Assistant Professor : Rs. 700-40-1100-50-1600.
3. Key Punch Operator : Rs. 260-6-290-EB-6-326-EB-8-390-10-400.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

For Key Punch Operator

(i) Age limit 35 years; relaxable by 5 years in respect of candidates belonging to Scheduled Castes & Scheduled Tribes/Ex-servicemen/Physically handicapped candidates.

(ii) Upto 1% of the vacancies are reserved each for deaf, blind and orthopaedically handicapped, in Group C & D (class III & IV posts).

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope (affixing Postage Stamps worth Rs. 2.85) of 23 cm × 10 cm. size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-67, should reach him latest by **28th April, 1980**.

Candidates from abroad, applying for the faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their name, date and place of birth, marital status, nationality; state of domicile; postal and permanent address: father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates' professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate. ●

UNIVERSITY OF DELHI

Advt. No. Estab. IV/64/80 **Dated 12th March, 1980**

Applications on the prescribed form are invited for the following posts:—

Department	Designation
Political Science	One Professor
Zoology	(i) One Professor
	(ii) Research Associate
Education (C.I.E.)	(i) Two Readers
	(ii) One Lecturer (Geography)
	(iii) One Audio-Visual Assistant
Mathematical Statistics	(i) One Reader
	(ii) One Lecturer
Urdu	One Reader
History (South Delhi Campus)	One Reader (temp. upto 2-9-1981)
Mathematics	One Reader
Library Science	One Reader
Botany	(i) One Reader
	(ii) Two Lab. Attendants (temporary but likely to continue) Reserved—one for Scheduled Tribe and One for Ex-serviceman
	Note: General candidates may also apply. If suitable candidates are not available from the above category, the posts will be de-reserved.
Modern European Languages	One Lecturer in Italian
Modern Indian Languages	One Lecturer in Panjabi (temporary upto 19-1-1981).
Law-Centre-I	One Part-time Lecturer
Faculty of Management Studies	One Placement Officer
Physics	One Senior Technical Assistant (for Telescope) (Temp. but likely to continue).
History	(i) One Curator (Museum)
	(ii) One Museum Attendant
Delhi University Library System	5 Library Clerks (Reserved-2 for Scheduled Caste; One for Scheduled Tribe and one for Ex-serviceman)

Note: Completed applications for the posts of **Library Clerks only** may be sent to the Librarian, Delhi University Library System, University of Delhi, Delhi-7.

The scales of pay of the posts are:—

Professor—Rs. 1500-60-1800-100-2000-125/2-2500.

Reader—Rs. 1200-50-1300-60-1900.

Lecturer—Rs. 700-40-1100-50-1600.

Placement Officer—Rs. 1100-50-1600.

Research Associate

Consolidated emoluments as under :—

A : Rs. 1,000/- p.m. (Fixed)

B : Rs. 1,200/- p.m. (Fixed)

C : Rs. 1,400/- p.m. (Fixed)

On the recommendation of the Selection Committee.

Part-time Lecturer in Law

Rs. 500/- p.m. (fixed) for work-load ranging from 3—6 hours per week;

Rs. 750/- p.m. (fixed) for work-load ranging from 7—10 hours per seek.

Note: Part-time teachers in Law will be appointed initially for a period not exceeding one academic year which could be renewed after each academic year with the total tenure of appointment of an incubent not exceeding 5 years.

Senior Technical Assistant —Rs. 550-25-750-EB-30-900.

Audio-Visual Assistant—Rs. 330-480 (proposed to be revised to Rs. 425-15-500-15-560-20-640).

Museum Curator—Rs. 425-15-500-EB-15-560-20-700.

Library Clerk—Rs. 260-6-290-EB-6-326-8-360-EB-8-390-10-400.

Laboratory Attendant/Museum Attendant—Rs. 210-4-250-EB-5-270.

All posts except part-time Lecturer and Research Associate carry D.A., C.C.A and H.R.A. as admissible under the rules in force in the University from time to time.

ESSENTIAL QUALIFICATIONS FOR:

Professorships

A scholar of eminence.

Independent published work of high standard and experience of teaching Post-graduate classes and guiding research for a considerable period desirable.

Readership in Library Science

(i) A good academic record with first or high second class Master's degree in Library Science or Library and Information Science or equivalent qualifications.

(ii) 7 year's teaching experience to Post-graduate classes in Library Science preferably at the Master's level.

OR

5 year's teaching experience to the Post-graduate classes in Library Science plus five years administrative experience in a responsible professional capacity.

Readerships (other than Library Science)

Good academic record with first or high second class Master's Degree in the subject concerned with a Doctor's Degree or equivalent published work.

Independent published work (in addition to the published work mentioned above) with atleast 5 years' teaching experience in Honours/Post-graduate classes essential.

Lectureships: (other than Education)

Essential: Good academic record with a first or high second class Master's Degree or an equivalent degree of a foreign University in the subject concerned.

(**Note** : Second Class would mean atleast 50% marks in the subject or equivalent grade.)

Desirable:

(i) A Doctor's Degree or Evidence of Research work of equivalent standard in the subject concerned. (ii) Teaching experience of Degree/Post graduate classes.

Provided if a teacher is not a Ph.D./M. Phil./M. Litt. at the time of his/her appointment and does not qualify himself/herself for the award of Ph.D./M.Phil./M.Litt. Degree from a recognised University in a subject which is being taught by him/her within a period of five years from the date of his/her appointment or does not give evidence of research work within that period in the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements.

Lectureship in Education (Geography)

Good academic record with a first or high second class Master's Degree in Geography or equivalent degree of Foreign University in the subject and Degree or Diploma in Education.

Note: Second Class means atleast 50% marks in the subject or equivalent grade.

Part-time Lecturer in Law

Good academic record with first or high second class Bachelor's or Master's Degree in Law, practice at the Bar for atleast 5 years of which atleast 3 years should have been in the Trial Courts. Previous teaching experience desirable but not essential.

Research Associate

Consistently Good academic record with first or high second class (B+) Master's degree or an equivalent degree of a foreign University in Zoology.

Note: Initial appointment will be for a tenure period of 3 years, extendable by another 2 years only. In no case the tenure will extend beyong 5 years in all.

Audio-Visual Assistant

(a) Minimum Higher Secondary with Science subjects.

(b) Diploma or Certificate course in the use of Audio-visual equipment organised by N.C.E.R.T. or other recognised bodies.

Library Clerks

(a) Matriculation or Higher Secondary

(b) Experience/proficiency in one of the following areas for three years:
  - (i) Typing with minimum current speed of 35 w.p.m.;
  - (ii) Understanding of classification system;
  - (iii) Experience in preparing and filling of Catalogue cards;
  - (iv) Experience of accessioning work;
  - (v) Experience of Counter duties;
  - (vi) Knowledge of multiple languages.

(c) Candidates will have to qualify the General English Test and such other tests as may be held to assess their proficiency/experience in one of the qualifications mentioned under (b) above.

Laboratory Attendant

Should have passed Matriculation or an equivalent examination with Science subjects.

Placement Officer

Master's Degree in Business Management, Engineering, Technology, Arts, Science or in any discipline of social sciences such as Sociology, Economics, Commerce, Psychology, Social Work, etc. with familiarity in Business Management and/or Personnel Management.

Museum Curator

A good second Class M.A. Degree in Ancient Indian History and Culture (with specialization in Fine Arts) or Archaeology with considerable fields experience in Archaeology.

Museum Attendant

High School or Higher Secondary or its equivalent with some experience of working in archaeological excavations museum.

Senior Technical Assistant

B.Sc. with Physics as one of the subject.

SPECIAL/DESIRABLE QUALIFICATIONS

Professorship in Zoology

Specialization in any of the following:

1. Cell Biology
2. Comparative Animal Physiology
3. Developmental Biology
4. Endocrinology
5. Entomology
6. Fish Biology

Readerships in Education

Candidates should have specialized in one of the following areas :—

Educational Administration/Comparative Education/Teacher Education/Guidance/Educational Psychology/Philosophy of Education/Sociology of Education/Social Science Education/Language Education/Science Education.

Readership in History (South Delhi Campus)

Medieval Indian History

Readership in Library Science:

(i) Ph.D. Degree or independent published work of high academic standard.

(ii) Ability to guide research in the subject.

Readership in Botany

Candidates should have specialization in one of the following fields :—

Plant Morphogenesis/Population Biology/Experimental Embryology.

Lectureship in Education (Geography)

A Doctorate Degree or evidence of research work of equivalent standard in the subject concerned.

Teaching experience of Degree/Postgraduate Classes/Secondary School/Training College.

Lectureship in Italian

Experience of teaching Italian literature of the twentieth century is desirable.

Part-time Lecturer in Law

Teaching experience or practice in Labour Law, Tax Law, Military Law, Law relating to Trade Marks, Copy Rights and Patents, Limitation and Arbitration and Civil Procedure.

Research Associate in Zoology

(1) Ph.D. degree from a recognised University or equivalent research experience as evidenced by publications.

(2) **Specializations'** Biological Chemistry, Cell Biology, Endocrinology, Entomology or Fish Biology.

Placement Officer

A person having industrial background or the knowledge of working of private and/or public undertakings or educational institutions with special reference to placement and training work will be given preference.

Audio-Visual Assistant

(a) Experience of teaching the use of Audio-Visual aids.

(b) Ability to attend to minor repairs.

Senior Technical Assistant

Working experience in an observatory.

Museum Curator

Ability to undertake independent field work, photography and drawing work.

Museum Attendant

Aptitute for further study.

Library Clerks

Preference sill be given to those who hold a Certificate in Library Science.

Laboratory Attendant

Should have worked in a Laboratory.

The prescribed application form can be had from the Information Section of the University either personally or by sending a self addressed envelope (size 13 cm X 28 cm.) with postage stamps worth **Rs. 2.85**.

The candidates will have to produce the original documents relating to their age, qualifications, experience, etc. at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees, other certificates, marksheets, published research articles, etc. should reach the undersigned not later than **12th April, 1980**.

Note:—

1. It will be open to the University to consider the names of suitable candidates for teaching posts who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases, in respect of all teaching posts on the recommendation of the Selection Committee.
2. Canvassing in any form by or on behalf of the candidate will disqualify.
3. Candidates from outside Delhi, for teaching posts only, called for interview will be paid to and fro single second class rail fare.
4. The University reserves the right not to fill up any of the vacancies advertised, if the circumstances so warrant.

REGISTRAR

UNIVERSITY OF POONA

Applications are invited for the following teaching posts on or before **25th April, 1980**.

1. **Professor**: One each of Politics and Public Administration Philosophy and Physics (Temp.)
2. **Reader** : One each of Geography, Physical Chemistry (Temp.) and Law (Temp.)
3. **Lecturer** : One each of French, Archaeological Chemist, Experimental Psychology, Statistics, Physical Chemistry (Temp.), Geography, Philosophy, Philosophy-Nyaya Pandit (Temp.) and three in Physics (Two posts are Temp.)

The details of qualifications, pay etc. and prescribed application form can be obtained by sending a Postal Order of Rs. 10/- drawn in the name of the Registrar with a self-addressed envelope (23 cm X 10 cm.) bearing postal stamps of Re. 1/- to the Registrar, University of Poona, Ganeshkhind, Pune-411007 or by paying the cash in the University office.

Ref. No. Admn/3181.
Date: 18th March, 1980

S.P. Bhosale
REGISTRAR

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

ADMINISTRATIVE OFFICE
RAJENDRA NAGAR
HYDERABAD-500030.

Advertisement No. 2/80 Dt. 13-3-1980

Applications are invited in the prescribed form along with registration fee of Rs. 5/- for the posts of Artist-cum-Photographers in Andhra Pradesh Agricultural University, so as to reach the Registrar on or before **30-4-1980**.

Total Number of vacancies:

(Two posts are reserved for candidates belonging to Scheduled Castes and one post is reserved for Backward Class 'A' group.)

Scale of Pay:

Rs. 550-20-850-25-900.

Qualifications prescribed :

(i) Pass in S.S.L.C. or H.Sc. or an equivalent examination.

(ii) Diploma in Commercial Art of any recognised Institute or any equivalent qualification.

(iii) A Certificate of Photography from a recognised Institute.

Note: The basic pay at a suitable

stage within the approved pay scale will be allowed in deserving cases.

Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Rajendranagar, Hyderabad-30 on payment of Rs. 2/- in person or through postal order uncrossed.

T. Narayan Reddy
REGISTRAR

CENTRE OF ADVANCED STUDY IN PSYCHOLOGY
UTKAL UNIVERSITY
VANI VIHAR,
BHUBANESWAR-751004

Applications are invited for the under mentioned vacancies: Advanced teaching and research is undertaken in the following four areas :

(a) Social, (b) Comparative & Physiological, (c) Educational, and (d) Developmental Psychology.

- (a) **RESEARCH ASSOCIATES** (About three) Rs. 1000/- or Rs. 1,200/- or Rs. 1,400/- P.M.; Requirement—Ph.D. in Psychology, or Education with specialisation Ed. Psy.
- (b) **SENIOR RESEARCH FELLOW:** (About two)—Rs. 600/- p.m.; Requirement—Ph.D. in Psychology or Education with specialisation in Ed. Psy., or equivalent publications.
- (c) **JUNIOR RESEARCH FELLOW:** (About two)—Rs. 400/- p.m.; Requirement—Atleast B+ in M.A. in Psychology.
- (d) **TEACHER FELLOW** (Eleven)—Living allowance of Rs. 250/- p.m. in addition to salary from the employer; Requirement—University and college teachers securing atleast 50% in M.A. in Psychology.
- (e) **NATIONAL SCHOLARSHIP:** (Eight)—Rs. 250/- p.m.; Requirement—Outstanding psychology honours graduates desiring to continue M.A. in psychology in the department from July, 1980.

Forms will be supplied on receipt of Rs. 3.21 by crossed Indian Postal order, payable to **Head, Department of Pshychology, Utkal University, Bhubaneswar-751004**, and a self addressed Registered envelope. Forms are available free for National Scholarship only.

Last: date of submission of completed application forms for all categories except (e) is **20-4-1980**. Last date for category (e) is **30-6-1980** or within two weeks of publication of B.A. Examination results, 1980 of Utkal University.

Note —Those applying for Teacher Fellowships have to apply for admission to the M Phil. course in psychology. Forms will be available from the Administrative Officer, P.G. Central Office, Utkal University, Bhubaneswar-751004, on written request and on payment of crossed Indian Postal Order for Rs. 3.14, by **31-5-1980**

R. Rath
HEAD

Indian school of Mines

DHANBAD-826004.

Advertisement No. 420003/80 **Dated March 10, 1980**

The Indian School of Mines (deemed to be a University under the UGC Act) invites applications for the following permanent posts, unless otherwise stated.

8. One Senior Tech. Assistant for the Deptt. of mining Engineering.

QUALIFICATION AND EXPERIENCE:

Essential: (1) Diploma in Instrumentation Technology or in Mechanical/Electrical Engineering/Electronics from a recognised polytechnic (or equivalent approved qualification) **OR** Certificate in Instrument repair and maintenance from an ITI (or equivalent approved qualification).

(2) Experience in repair, maintenance and fabrication of instruments in any industrial/research/testing laboratory for a period of about five years for candidates holding a diploma and 10 years for those holding a certificate.

Desirable: (3) Experience of handling electronic instruments and/or ability to develop instruments/equipment.

1(a) **One Senior Technical Assistant for the Department of Chemistry Fuel and Mineral Engineering.**

QUALIFICATION AND EXPERIENCE:

Essential: (1) Diploma in Instrument Technology (or equivalent).

(2) Experience in working in a Mineral Engineering Laboratory will be preferred.

2.2 **Two Scientific Assistant/Professional Assistant for Library.**

QUALIFICATIONS AND EXPERIENCE:

(1) A good Bachelors' Degree (Essential).

(2) A Degree or Diploma in Lib. Science (of one year's duration after graduation) with at least 60% marks (Essential but relaxable in case of candidate otherwise well qualified).

(3) Experience of at least two years in a technical or scientific library of standing (Essential).

(4) Good knowledge of technical processing work of documents (familiarity with UDC/AACR) (Essential). For one post familiarity and experience in Reprography work.

(5) Good handwriting and knowledge of typing.

PAY SCALES: Rs. 550-900/- for STA/SSA, Rs. 425-700/- for SA/PA, in addition, allowances admissible as per Govt. of India Rules Sanctioned from time to time. Total emoluments currently amount to Rs. 826.80 at the Rs. 550/- stage, Rs. 647.70 at the Rs. 425/- stage.

Age Limit: Not more than 30 years for STA/SSA and 25 years for PA/SA. Upper age limit relaxable by five years for SC/ST candidates. Age limit also relaxable in case of persons otherwise considered especially suitable.

General: Other things being equal, preference will be given to SC/ST candidates.

Further details and prescribed application forms are obtainable from Registrar, Indian School of Mines, Dhanbad-826004 on sending a self-addressed envelope of size 30 cm x 12 cm affixed with postage stamps of the value of Rs. 3.45 only. Completed application forms should reach the Registrar on or before 15th April 1980.

CANVASSING IN ANY FORM WILL BE TREATED A DISQUALIFICATION

S.P. Varma
REGISTRAR

O/ISM/80

INDIAN INSTITUTE OF TECHNOLOGY

KHARAGPUR

Advertisement No. R/1/Scheme/Centre/80

Applications are invited for the undermentioned posts in the different Centres/Sponsored Research Schemes at the Indian Institute of Technology, Kharagpur, West Bengal. All posts are on contract basis for the periods specified or for the duration of the Schemes, whichever is less. The contracts are renewable if the Schemes are continued.

I. AERONAUTICAL ENGINEERING DEPARTMENT

Scheme : "Studies on Remotely Controlled Flight Vehicles" (A.R.D.B. Scheme).

Post : JUNIOR SCIENTIFIC OFFICER—2 posts

Scale of Pay :

Rs. 700 - 40 - 900- EB- 40-1100- 50-1300/-plus D.A. as admissible.

Age : Between 25 and 38 years.

Duration : 2 years.

Qualifications :

A good academic record with a Bachelor's degree in Aeronautical Engineering.

II. AGRICULTURAL ENGINEERING DEPARTMENT

(i) **Scheme** : "Model Agronomic Experiments Scheme" (ICAR Scheme)

Post : ASSISTANT AGRONOMIST 1 post

Scale of Pay :

Rs 700-40-900-EB-40-1100-50-1300/-plus D.A. as admissible.

Age : Between 25 and 38 years.

Duration : 2 years.

Qualifications :

Essential : First Class M.Sc. AGE (Agronomy) and Ph.D. in Agronomy or Crop Production.

Desirable :

Knowledge of (1) Agricultural Statistics and Field experimentation, (2) Preparation of research reports.

(ii) **Scheme**: "Energy Requirement for Agriculture Production" (ICAR Scheme)

Post : SENIOR RESEARCH OFFICER—1 post

Scale of Pay :

Rs. 1100-50-1600/- plus D.A. as admissible.

Age : Preferably between 30 and 40 years.

Duration : 5 years.

Qualifications :

Essential : (i) First Class Master's degree in Agri. Engg. (ii) 5 years' experience in Farm Machinery both in teaching and research.

Desirable :

(i) Doctorate in Agricultural Engg. (ii) Knowledge in modern methods of investigations.

III. ELECTRONICS & ELECTRICAL COMMUNICATION ENGINEERING DEPARTMENT

Scheme : "Development of Low Loss Ferrimagnetic Inks etc." (D.S.T. Scheme)

Post : PROJECT OFFICER—1 post

Pay : Rs. 1000/- p.m. (consolidated)

Age : Below 30 years.

Duration : 3 years.

Qualifications :

Essential: M.E./M.Tech. in Solid State Devices/Micro-electronics or M.Sc. with Electronics special with two years' experience.

Desirable :

Experience in fabrication of semiconductor devices and hybrid thick film circuits.

IV. JERSEY BULL MOTHER FARM

Scheme : Sponsored by I.D.C.

Duration : 3 years.

(a) **Post**: SENIOR PROJECT MANAGER—1 post

Scale of Pay :

Rs. 1100-50-1600/- plus D.A. as admissible

Age: Not less than 35 years.

Qualifications :

Essential : (i) Good degree in veterinary science from a recognised University, (ii) Postgraduate degree in Veterinary Science/Animal Husbandry/ Dairy Management or allied subjects, (iii) Practical experience in the Management of a Cattle Breeding Farm, preferably exotic stock, (iv) He should have experience of not less than 10 years of which about 5 years on a farm of exotic breeds.

Desirable :

(i) Experience of using frozen semen (ii) Experience of producing fodder.

Job description:

Selected candidates will be responsible for the efficient management of the farm of pure bread exotic stock, supervision and planning of farming operations, coordination with other technical officers in the implementation of field A.H. Programme and general administration.

(b) **Post**: JUNIOR PROJECT MANAGER (VETERINARY)—1 post

Scale of Pay:

Rs. 700-40-900-EB-40-1100-50-1300/-plus D.A. as admissible.

Age : Not less than 35 years.

Qualifications :

Essential: (i) Good degree in Veterinary Science from a recognised University, (ii) Experience of about 10 years of which about 5 years should be in a cattle breeding farm of exotic stock, (iii) Experience in control of diseases including infectious and non-infectious.

Desirable:

(i) Advanced higher training in Veterinary Science, (ii) Experience of organising Veterinary dispensary.

Job description:

Selected candidate will be responsible for health and hygiene of farm animal, including vaccination schedule.

V. MATERIAL SCIENCE CENTRE

Scheme: "Development of Alkaline Durable Glass Fibres for reinforcement with cement"—(D.S.T. Scheme)

Post : RESEARCH ENGINEER—1 post

Pay : Rs. 1300/- pm. (consolidated)

Duration : 3 years.

Qualifications:

Essential: A good Bachelor's degree in Mechanical / Metallurgical / Civil/ Ceramics Engineering with adequate research/industrial experience,

OR

a Ph.D. in Physics/ Chemistry with adequate experience in glass fibre drawing/composite materials.

Desirable :

Experience in the field of Ceramic Fibre Composites.

VI. POST HARVEST TECHNOLOGY CENTRE

(i) **Scheme**: "Design, Development & Evaluation of Farm Level and Commercial Grain Driers and Drying System" (ICAR Scheme)

Post: JUNIOR RESEARCH ENGINEER—1 post

Scale of Pay:

Rs. 700-40-900-EB-40-1100-50-1300/-plus D.A. as admissible.

Age: Not exceeding 35 years.

Duration: 2 years.

Qualifications:

Essential: Bachelor's degree in Agricultural Engineering with two years' experience in Crop Processing or M.Tech. in Crop Processing.

Desirable:

Research or teaching experience in Crop Processing.

(ii) **Scheme**: "Development and Testing of Farm Level and Solar-cum-Husk Fired Grain Dryers and Drying System"—(D.S.T. Scheme)

Post: JUNIOR RESEARCH ENGINEER—1 post

Pay: Rs. 1200/- p.m. (consolidated)

Age: Preferably between 25 and 38 years.

Duration: 2 years.

Qualifications:

Bachelor's degree in Mechanical/ Agricultural/Chemical Engineering with two years' experience in Crop Processing or M.Tech. in Crop Process Engineering or equivalent.

Desirable:

Research or teaching experience in Crop Processing.

(iii) **Scheme**: "Harvest and Post Harvest Technology"—(ICAR Scheme)

Post: JUNIOR RESEARCH OFFICER—2 posts (Entomology/Biochemistry)

Scale of Pay:

Rs. 700-40-1100-50-1600/-plus D.A. as admissible.

Age: Not exceeding 35 years.

Duration: 5 years.

Qualifications:

Essential: (i) First class Master's degree in Agriculture or Zoology with specialization in Agr. Entomology/ First Class Master's degree in Bio-Chemistry or Chemistry with specialization in Bio-Chemistry or Food Technology. (ii) Three years experience in Research in appropriate field. (iii) Ph.D. in appropriate branch.

Desirable:

Knowledge of statistics and field experimentation, preparation of research reports etc.

(iv) **Scheme**: "Regional Extension Service"—(Deptt. of Food, Govt. of India Scheme).

Duration: 5 years.

(a) **Post**: DEPUTY DIRECTOR (EXTENSION)—1 post

Scale of Pay:
Rs. 1200-50-1600-60-1900/- plus D.A. as admissible.

Age: Preferably between 30 and 40 years.

Qualifications

Essential: (i) First Class Master's Degree in Agricultural Engineering. (ii) 5 years' experience in Crop Process Engg. both in teaching and research.

Desirable:
(i) Doctorate in Agricultural Engg. (ii) Knowledge in modern methods of transfer of technology.

(b) **Post:** EXTENSION OFFICER—1 post

Scale of Pay
Rs. 700-40-1100-50-1600/- plus D.A. as admissible.

Age: Preferably below 30 years.

Qualifications:

Essential: (i) First Class Master's degree in Agri. Engg. (ii) 2 years experience in Crop Process Engg. both in teaching and research.

Desirable:
Knowledge in modern methods of investigation and extension.

VII. RADAR AND COMMUNICATION CENTRE

(i) **Scheme:** "Microwave Antennas including Phased Arrays"

Duration: 2 years.

(a) **Post:** PRINCIPAL SCIENTIFIC OFFICER—2 posts

Scale of Pay:
Rs. 1500- 60- 1800- 100- 2000 /- plus D.A. as admissible.

Age: Preferably below 50 years.

Qualifications:

Essential: (i) A good academic record with a Master's degree in Electronics and Communication Engineering or its equivalent; (ii) 10 years' experience in the field of Antennas, Phased Arrays, Electromagnetics, of which at least 5 years in the research and development work; and (iii) Published research work of good quality in journals of repute.

Desirable:
(i) Doctorate degree (ii) Good design and/or industrial experience.

(b) **Post:** SENIOR SCIENTIFIC OFFICER—2 posts

Scale of Pay:
Rs. 1100-50-1600/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Qualifications:

Essential: M. Tech. degree with first class at the Bachelor's degree level in Electronics and Communication Engineering or equivalent with 5 years' experience in research and development work.

Desirable:
Experience in carrying out research, corporate membership of a recognised Institution. Specialisation in any one of the following :—
(1) Microwave Antennas,
(2) Phased Array Antennas,
(3) Electromagnetics.

(c) **Post:** JUNIOR SCIENTIFIC OFFICER—1 post

Scale of Pay:
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Age: Not exceeding 35 years.

Qualifications:

Essential: (i) First class Bachelor's degree in Electronics and Communication Engineering or equivalent. (ii) At least two years' experience in research/development work.

Desirable:
M. Tech. degree in Electronics and Communication Engineering.

Specialisation:
Knowledge in any one of the following :—
(1) Microwave Antennas,
(2) Phased Arrays,
(3) Electromagnetics.

(ii) **Scheme:** "Studies on Electromagnetic Scattering and Target Identification."

Post: SENIOR SCIENTIFIC OFFICER—2 posts

Scale of Pay:
Rs. 1100-50-1600/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Duration: 2 years.

Qualifications and Specialization:

Essential: M. Tech. degree with first class at the Bachelor's degree level in Electronics and Communication Engineering or equivalent with 5 years' experience in research and development work.

Desirable

Experience in carrying out research, corporate membership of a recognised Institution. Specialisation in any one of the following—
(1) Microwave Antennas.
(2) Phased Array Antennas.
(3) Electromagnetics.

(iii) **Scheme** "Feasibility Study of Phased Array Radar Systems including applications for Missile Tracking and Precision Approach Radar."

Post: JUNIOR SCIENTIFIC OFFICER—2 posts

Scale of Pay
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Age: Not exceeding 35 years.

Duration: 2 years.

Qualifications:

Essential: (i) First Class Bachelor's degree in Electronics and Communication Engineering or equivalent. (ii) At least two years' experience in research/development work.

Desirable:
M. Tech. degree in Electronics and Communication Engineering.

Specialisation:
Knowledge in any one of the following:—
(1) Microwave Antennas,
(2) Phased Arrays,
(3) Electromagnetics.

(iv) **Scheme:** "Detection of Geological Discontinuities and Weak Zone in Coal Mines using Radar Techniques"

Duration: 2 years.

(a) **Post:** SENIOR SCIENTIFIC OFFICER—1 post

Scale of Pay:
Rs. 1100-50-1600/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Qualifications:

Essential: M. Tech. degree with first class at the Bachelor's degree level in Electronics and Communication Engineering or equivalent with 5 years' experience in research and development work.

Desirable:
Experience in carrying out research, corporate membership of a recognised institution.

Specialisation in any one of the following:—
(1) Microwave Antennas.
(2) Phased Array Antennas.
(3) Electromagnetics.

(b) **Post:** SCIENTIFIC OFFICER—1 post

Scale of Pay:
Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Age: Not exceeding 35 years.

Qualifications:

Essential: (i) First Class Bachelor's degree in Electronics and Communication Engineering or equivalent. (ii) At least two years' experience in research/development work.

Desirable:
M. Tech. degree in Electronics and Communication Engineering.

Specialisation:
Knowledge in any one of the following:—
(1) Microwave Antennas.
(2) Phased Arrays.
(3) Electromagnetics.

Application forms may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23 cm x 10 cm. Applications accompanied with an application fee (non-refundable) of Rs. 7.50 (Re. 1.87 for SC/ST candidates) payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur, at Kharagpur-2 Post Office should reach the Registrar, IIT, Kharagpur by the **30th April, 1980.**

Applicants who are in the employment of Government / Semi-Government organisations or any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

PUNJABI UNIVERSITY
PATIALA
Notice

Reference our advertisement No. 9/Est/EPS/PRG/80 Published in March 15, 1980 issue, the last date for the receipt of applications both for advance and through proper channel for the post of Professor of Economics has been extended upto April 15, 1980.
No.12/Est/SPS/PRO/80.

REGISTRAR

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University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH APRIL 15, 1980

MAY 1

Special convocation held at Jiwaji University to confer the degree of D.Lit. (honoris causa) to Prof. S. S. Bhandarkar, its former Vice-Chancellor and others.

ASSOCIATION OF INDIAN UNIVERSITIES PUBLICATION

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

ADMN. OF ICE: RAJENDRA-
NAGAR:
HYDERABAD—30

Advertisement No. 3/80, dated: 29.3.1980

Applications are invited in the prescribed form alongwith the Registration fee of Rs. 5/- for the following vacancies in the Andhra Pradesh Agricultural University so as to reach the Registrar on or before 30-4-1980.

Sl. No.	Name of the post	No. of vacancies
1.	Agronomists	5
2.	Soil Scientists/Agricultural Chemists	4
3.	Soil Physicists	3
4.	Entomologists	4
5.	Plant Physiologist	1
6.	Horticulturist (Agronomy)	1
7.	Plant Pathologists	2
8.	Agricultural Economist	1

Qualifications for all the above posts

(a) **Essential**

(i) Ph.D., Degree or other equivalent degree in the subject concerned or other published work of an equally high standard.

(ii) 5 years experience of teaching and/or research and/or extension in the concerned subject.

(b) **Desirable**

Other things being equal a basic Professional degree in the Faculty concerned is preferred.

Scale of pay for all the above posts
Rs. 1200-50-1300-60-1900.

All the posts are temporary but likely to continue.

(i) Applicants should appear for interview before the Selection Committee at their own cost, if so required.

(ii) Selected candidates are liable to be transferred to any equivalent posts in teaching, research and extension under the University.

(iii) The persons selected will be on probation for a period of 2 years within a continuous period of 3 years.

(iv) It is open to the University to fill or not to fill the posts advertised.

(v) Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Administrative Office, Rajendranagar, Hyderabad-30, on payment of Rs. 2/- in person or through postal order uncrossed.

T. Narayan Reddy
REGISTRAR

Indian school of Mines

DHANBAD-826004

No: 615135/79 Dated: March 21, 1980

Admission to Postgraduate Earth Science Programmes 1980-81

1. Applications are invited from candidates possessing requisite qualifications as indicated below for admission to the following post graduate EARTH SCIENCE programmes being (or likely to be) offered at Indian School of Mines, which is deemed to be a University under the UGC Act:

No.	Programme	Eligibility Qualifications	Department
ES-I	One-year M Tech (Mineral Exploration)	M Sc in App Geology	Applied Geology
ES-II	One-year M Tech (Engg Geology)	M Sc in App Geology OR Degree (or equiv) in Civil Engg.	-do-
ES-III	One-year M Tech (Mining Geophysics)	M Sc in Geophysics/ App Geophysics	Applied Geophysics
ES-IV	One-year M Tech* (Petroleum Exploration)	-do-	-do-

*This is a new programme likely to be offered from the 1980-81 Session.

2.1 In each case a candidate should have obtained at least 60% marks in the qualifying examination-relaxable to 55% for SC/ST candidates, for sponsored candidates and for those with field/research experience or special aptitude for research.

2.2 Candidates shall have to appear at a written test (of about two-hour duration) and **viva voce** at the SCHOOL on the dates intimated. No T.A. shall be paid for attending these tests.

2.3 Only 16 candidates shall be admitted to each course, 20% of the seats are reserved for SC/ST candidates, if available; Otherwise they will be thrown open.

3.1 Preference is given to **sponsored candidates**, (Sponsorship in this context means retention of lien on post and grant of suitable allowance). Application of sponsored candidates should carry suitable endorsement to this effect by the employer.

3.2 **Scholarships**: Unsponsored students are eligible for a Scholarship of Rs 400 p m. for a period not exceeding 12 months provided that they have obtained at least 60% or 55% marks, as the case may be, in the qualifying examination.

4.1 **Procedure for applying**: Application forms along with programme particulars can be obtained by sending a Bank Draft or crossed Postal Order (where banking facilities are not available) for a sum of Rupees Five only, made payable to the Registrar, Indian School of Mines, Dhanbad-826004, alongwith a self-addressed unstamped envelope of size 23 cm × 10 cm.

4.2 **Last Date for Receipt of Completed Application is May 20, 1980.**

S.P. Varma
REGISTRAR

O/ISM/80

UNIVERSITY
NEWS

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13 MAY 1980

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Syndicate Studies—A Teaching-Learning Technique in Higher Education

Br. Elias Maria & Dr. (Mrs.) Rajani Shirur

What is a Syndicate ?

The term syndicate implies "Combination of Commercial firms associated to forward a common interest". Originally used widely in the industrial sector, the term has gained importance in recent years in the educational field. A syndicate is a self-selected small group of learners (about five or six) who carry out assignments based on reading, discussion and writing.

As a method of learning, it is particularly suited to adults for it provides adequate freedom to the learners in the choice of materials, level of participation, and in the whole process of learning. Syndicate studies are essentially nonformal by transcending the class situation and holding group discussions, supplemented by available resources resulting in a substantial and erudite report on a particular subject or problem.

Scope and Functions

Structuring the learning situation is vitally important and the learning is highly effective when the learners are entrusted with the responsibility for organizing their own learning. Syndicate method provides opportunity to the learners for taking up the responsibility for structuring the learning situation and the related components.

The syndicate method provides an atmosphere of freedom to learn and free the learners from dependency leading to a critical insight into problems and subjects. This method attempts to provide conditions that enable the learners to develop their initiative, objectivity and judgement.

Objectives

In any productive work group, what is expected is to share the experiences by the learners and become conscious of the state of interdependence in addition to gaining knowledge on the subject matter. Another important objective of the syndicate method is that of improving the skill of critical judgement by providing opportunities to the learners for considering their own beliefs and values in relation to their learning. It also provides a setting in which matured academic relationships with the fellow-learners and the instructor are developed.

Main features of the Syndicate Method

The primary features of the syndicate method include the following : A group of say 25-30 learners are divided into four or five syndicates each consisting of five or six learners.

A major theme, is selected and divided into several critical aspects, and a series of questions or problems are identified and each of the syndicate is assigned with a particular aspect. A detailed reading list and other stimulus materials are prepared and provided to these syndicate groups. Members of each syndicate distribute the tasks among themselves and discuss views and ideas and give a report, or speak about one of the particular aspects of the subject. This method calls for tact and initial preparation and guidance on the part of the leader —teacher. This method is highly motivating and produces lively discussions. The size of the group, being small, encourages participation and removes fears and inhibitions of the participants.

Basic Principles of Syndicate Method :

The Syndicate group should formulate clear-cut objectives. A clearly differentiated role structure understood by all the members must follow. There should be shared norms and values with regard to procedures to be adopted for the syndicate. Under this method, each individual is recognised as having different skills and responsibilities to offer to the syndicate. The syndicate must enjoy free flow of communication of relevant information. The group activity ensures effective learning and assimilation, and develop qualities of leadership and initiative.

The group work together with or without a guide and cooperation in making a decision and or preparing a report. Greater emphasis is given on interaction between members which decreases dependence on the guide or instructor.

The report of the syndicates are presented to the whole group in a plenary session. On the basis of these group reports, the instructor synthesises, challenges or offers supplementary conceptual framework.

Syndicate method demands hardwork and provides a vivid shared experiences. But the participants feel less pressure because of their active involvement. This method is more conducive to independent thinking.

Role of the Instructor :

The functions of the instructor who uses syndicate method is much more demanding than that of a conventional teacher. There are three critical areas of responsibility. First he/she has to clarify his/her course objectives, design it and select the appropriate readings. Second, he/she has to act as a guide and advise all the members by suggesting other resource materials as well as become aware of the social processes or dynamics that might impede the work of the syndicate group. Third he/she has also the responsibility of assessing the work of the syndicates.

PLENARY

Session I

(a) Groups are formed
(b) Topic is chosen and important aspects are identified
(c) Each syndicate is assigned a subject.

GROUP MEETING

Session II

(a) Each group has its own session in a separate place
(b) The group elects a leader, a rapporteur, and an observer. The observer could be changed for each group meetings
(c) A detailed break-up of the aspect taken up is made and an outline for discussion sessions is drawn up
(d) Each member of the group is assigned a sub-topic for intensive study and/or for writing a paper
(c) The discussion outlined by each of the syndicate is prepared and circulated among all the groups.

GROUP MEETING

Session III

Each group meets separately and discusses the plans and materials of other groups.

PLENARY SESSION

Session IV

(a) Each group gives its comments on the plans drawn up by other groups
(b) Revised plans are suggested.

GROUP MEETING

Session V

A group meeting is organised in which fresh materials, reference etc. are distributed and opinions shared on the topics allotted.

INDIVIDUAL WORK

Session VI

Individual members of each group study, make notes, read and plan and prepare fresh materials on the topics assigned.

Session VII

As many group meetings as are needed are organised for sharing of ideas and experiences. The ideas are synthesized, and papers are consolidated. Reports of each of the groups are prepared and distributed.

GROUP MEETING

Session VIII

Group meets separately to discuss the reports of other groups.

FINAL PLENARY SESSION

Session IX

(a) Group reports are read out and commented upon by all
(b) Final consolidated report is compiled.

Higher Education and Syndicate method :

The Syndicate method is a highly suitable method of teaching in higher education. It is particulary useful in developing skills for self learning among students in the colleges and Universities.

Education aims at creating critical awareness of any problem that demands active involvement which leads to action. Formulation of any action program calls for analysis of the problem in all its dimensions. This is best done through syndicate method. Not only individuals learn effectively in small groups, but they learn together through an analysis of a particular theme in its totality. Each individual is encouraged in the group to actively participate and contribute ideas and with the assistance, from other members and with the help of references, they change their attitude and gain the right understanding of the problem in its proper perspective. □

How Continuous is Continuous Internal Assessment ?

K. R. Ramachandran Nair*

The concept of continuous Internal Assessment as a tool for academic evaluation has undergone various changes since it was first introduced in Bihar in 1954. To-day almost all Universities have adopted it and some which follow semester pattern have made it an integral part of the overall evaluation and assessment technique. Teaching, learning and evaluation are the three components of the same process of education. Since learning/teaching is a continuous process, it is obvious that assessment also should be continuous. Continuous Internal Assessment is the process by which student attainment is evaluated at regular intervals during a specified course duration. Thus it is the updating of teachers' judgement about their own pupils at regular intervals enabling cumulative judgement to be made at the end of the course.

Continuous Internal Assessment, if scientifically organised, serves the purposes of feedback to learning activity. Tests and evaluation at regular intervals provide either a positive or negative feed back to the pupils. Thus they help the pupils to accelerate the learning activity or to terminate/modify it. Continuous Internal Assessment provides extended awareness to both the pupil and the teacher about the State of their performance in relation to the accepted educational objectives and goals. So learning/teaching activity becomes purposeful, goal-oriented and motivated. At every evaluating occasion the student handles only a limited quantum of materials. So a wide-spectrum feedback on areas of completed learning becomes possible.

Continuous Internal Assessment should not be viewed merely in terms of subjects or courses a student has to learn. Other aspects of the student's growth and development like his sense of judgement sensitivity, intelligence, capacity to think and work style of social functioning etc. are also to be taken into account. However, in actual practice, continuous Internal Assessment has degenerated into an insipid and mechanical procedure of conducting a few unprovocative tests and assignments during a semester instead of the traditional examination at the end of the academic year. The most widespread practice is to assess the student attainment through occasional tests and assignments either to be done in the class or at home. In both cases answers are either cooked up by the simple recourse to copying from bazaar notes or manipulated through unauthorised external assistance.

There are at least six factors that militate against a meaningful working of the continuous Internal Assessment system in our colleges :-

(1) Absence of a specific statement of educational objectives and goals in advance.
(2) Overcrowding in classes and the lack of facilities in almost all colleges to organise tests and assignments free of malpractices.
(3) Repeated interruptions to the process of teaching and learning in the campuses due to student agitations and general indiscipline rendering regular and continuous assessment impossible. Thus continuous assessment ceases to be continuous.
(4) Unseemly competition among colleges and even various departments in the same College to award inflated marks to their students either to exaggerate their doubtful academic achievements or to play safe with students.
(5) Lack of Teacher involvement and teacher training leading to apathy and reluctance to carry out experimentation.
(6) Pressures brought on the teachers by militantly organised student groups, politicians, parents and college managements to obtain inflated grades for undeserving students.

A charge against the continuous Internal Assessment system was that it would be used by teachers to tyrannise and harass students. However, to-day the situation is just the reverse. How it is the students who pressurise and even threaten the teachers by their perpetually organised militant postures to secure higher grades.

Continuous Internal Assessment is a scientific tool of evaluation if properly carried out. Like any other scientific system, this also might lead to disastrous consequences if misapplied. We have already begun experiencing the aberrations of the system. It is high time that the Universities and Colleges thought of some remedial measures or scrap the whole system and revert to the old pattern of external examinations conducted by the University. The theory that those who teach should also evaluate has lost much of its validity to-day because those who are expected to teach do not always teach and those who are expected to evaluate without fear or favour are forced to evaluate under constraints. Moreover, if continuous Internal Assessment is reduced to the testing of students knowledge of the subject alone as it is today, even external examinations would serve the purpose.

(*Continued on page 201*)

**Professor of English, Tagore Arts College, Pondicherry.*

Expenditure Analysis in College Management

C. B. Padmanabhan*

The object of this paper is to indicate the role that analysis of expenditure incurred by a college can play in college management. It is argued that a careful analysis of the expenditure of the college will ensure greater efficiency in the functioning of the college particularly with regard to the use of limited resources. In this paper, attention is limited only to the following three aspects of expenditure analysis :

(a) Classification of expenditure of the colleges ;
(b) Analysis of expenditure by percentage on instruction, administration, purchase of equipment etc. ; and
(c) Cost per student or unit cost.

One can identify several other kinds of financial analysis of the college expenditure but we limit our attention in this paper only to the above three. For this purpose we are also making use of the figures that are published by the Ministry of Education, Government of India, collected by them every year.

Classification of expenditure of the colleges

How are the expenditures of the colleges at present classified and accounted for ? Is there a uniform system of classification and accounting ? Till recently even universities in India have not been accounting their expenditures in a uniform way. Every university followed its own method of classification. After the UGC has laid down a model form of the budget universities in India have started classifying their expenditure and incomes in a standard way.

It is necessary to have accurate and strict classification of expenditures of the colleges for the following reasons :

(i) Colleges receive funds from different sources like State Govts. UGC, and private endowments. Expenditure out of these funds is to be done in accordance with certain restrictions.
(ii) The accounts must be accurately classified in accordance with the departmental organisation.
(iii) There should be comparability or data of different institutions and same institution.

In financial administration, attention must be paid to the classification system used in the accounting system. Theoretically we can identify the following five bases of classification of the expenditure:

(i) Effect of transaction on the assets of the institution. Accordingly the transactions may be a current one in the sense that it does not effect the asset of the college at all. It may be capital in the sense that it effects the asset of the college i.e. it may be an addition to capital. It may be a repayment of the debt.

(ii) Objects of expenditure. In this method of accounting, expenditure is accounted for on the basis of objects on which they are incurred: For example salaries, purchase of equipment and buildings etc. In fact at present our colleges account for the expenditure under these heads.

(iii) Functions performed. Expenditure can be accounted for on the basis of the functions on which the expenditure has been incurred ; functions the college has to perform various functions in order to achieve the objectives for which it is operating. For example, we can identify the following as the three major functional divisions for all expenditures :
   (a) Educational expenditure ;
   (b) Non-educational expenditure for services that do not directly contribute to the educational programme, and
   (c) Auxilary activities such as resident halls, dining rooms and other enterprises that are generally expected to be self-supporting. Under the major heads of educational expenditure the following six functions are recognised :
   I. General Administration and General Expenses
   II. Instruction
   III. Research
   IV. Plant Operation and Maintenance
   V. Extension activities
   VI. Museum and Library
   Under non-educational expenditure are included :
      I. Interest on debts
      II. Scholarships and other student aids
      III. Admission of students

(iv) The fourth method of classification of the expenditure that can be followed is on the basis of organisational unit which is performing the function i.e. there are various divisions of the college and each division's expenditure is accounted for under that account.

(v) Last basis of accounting is on the basis of the funds that the college have. It may be that in a certain colleges, there are different kinds of funds like student funds, endowment funds etc. and expenditure may be classified on the basis of these funds.

In the light of the above methods of classification of expenditure, we may enquire how the colleges in India are classifying their expenditure. The Ministry of Education collects every year information from all colleges in India in a prescribed form and expenditure is classified as the following :

(a) Salaries and allowances of teaching, academic staff.

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*Fellow, NIEPA.

(b) Salaries and allowances of non-teaching staff.
(c) Maintenance of buildings.
(d) Maintenance of equipment and furniture.
(e) Consumption of chemicals and other tools.
(f) Laboratories.
(g) Stipends, scholarships and other concessions.
(h) Games and sports.
(i) Hostel ; and
(j) Other items.
Total recurring expenditure.
(a) Libraries.
(b) Buildings.
(c) Equipments.
(d) Furnitures, and
(e) Other items.
Non-recurring expenditure.

On the basis of the above classification adopted by the Ministry of Education, we have given the total recurrent expenditure incurred by all colleges in general education (post-graduate, degree and under-graduate standard). Table No. 1 gives the total direct expenditure by objects. We may notice that a major portion of the direct expenditure is incurred on salaries of teachers and other staff. For example, for India as a whole 67.6% of the total direct expenditure is spent on salaries of teaching staff; 17.1% is spent on salaries of other staff. Thus 84.7% of the total direct expenditure is spent on salaries in colleges of general education. Only 4.5% is spent on equipment and other appliances and 13.5% is spent on other items. We may notice the small percentage of expenditure incurred on equipment and other appliances which will be useful for the purpose of teaching in colleges. For Andhra Pradesh State 64 4% of the total direct expenditure is spent on salaries of teaching staff; 16.4% is spent on salaries of other staff. Only 4.7% is spent on equipment and other appliances and 14.4% is spent on other items. We have given in Table No. 2 the percentage of expenditure incurred on salaries and other expenses by different colleges in Delhi (This information is taken from a study made by Dr Ruddar Dutt of Delhi University).

It may be noticed that we are not in a position to analyse the percentage of expenditure on different functions because there is no functional classification of expenditure incurred in colleges. If the expenditures of an institution have been accurately classified according to the functions, the determination of the percentage devoted to each of the functions throws considerable light on institutional policies. Comparison of the percentage distribution for several years will reveal the shifts that have occurred in emphasis on the various phases of the institutional programmes. We, therefore, conclude this section by suggesting that there should be a functional classification of expenditure.

Technique of unit cost analysis

Another method of analysing expenditure data is to relate the amount of expenditure to some quantitative expression of the size of the task to be performed. The essential purpose served by this unit cost technique is to translate figures for expenditure into terms that are comparable between or among institutions or departments within the institution or among the different functions or over a period of time. Unit cost techniques are widely used in industries for controlling prices and to evaluate efficiency of management and operation. The use of such unit costs in industries has led to extensive refinement in accounting techniques. The cost per student on instruction for example is the total cost of instruction divided by the number of students enrolled and receiving instruction. The total cost per student is the total expenditure of the college divided by the number of students.

Recurrent unit cost and capital cost per student

We have to distinguish between per student recurrent cost and per student capital cost. Per student recurrent cost indicates the cost of operating a seat. Per student non-recurrent cost indicates the cost of creating a seat. This is capital cost which will include cost of buildings, equipments, furnitures, play grounds facilities etc. The total capital cost divided by the number of students enrolled will give the capital cost per student. Per student recurrent cost indicates the cost of operating a seat after it has been created.

Factors affecting unit cost

Several factors affect cost per student. Some of them are :

(i) Age of the college—the older is a college the more stabilised it would have become in enrolment and, therefore, enrolment would have become large and cost per student is likely to be low. On the other hand, the older the college the larger will be the teacher salaries because of increments for teachers and the higher is likely to be the per student cost.
(ii) The size of enrolment. The larger number of students enrolled the lower is likely to be per student cost. That is why it is always suggested that the size of a college should be an optimum one in order that the per student cost is an optimum one. Table No. 3 brings the position relating to the size of the colleges in Delhi. We may notice that most of them are of not viable size and that is why it is suggested that there should be planning for the location of colleges.
(iii) The average pay of the teacher. Since the salaries of teachers constitute the major item of expenditure in colleges the higher the pay scale and the pay of a teacher the higher is likely to be per student cost.
(iv) The ratio of non-teacher cost to total cost. The higher the ratio of non-teacher cost to total cost the higher will be the per student cost.

We have given in table No. 3 the per student cost for some colleges in Delhi. We suggest that every effort be made in order to calculate the cost per student and use it for planning future activities in the college.

Table No. 1

Percentage of Total Direct Expenditure on Education by Objects and Per Student Cost (Colleges for General Education (P. G., Degree and Undergraduate) Standard)

State	Salaries of Teaching Staff	Salaries of Other Staff	Equipment & Appliances	Other items	Total Cost	Per Student Cost
	%	%		%	Rs.	Rs.
1. ANDHRA PRADESH	64.4	16.4	4.7	14.4	205887291	537
2. TAMIL NADU	70.2	13.7	6	10	135588369	697.8
INDIA	67.6	17.1	4.5	13.5	1756385481	572.5

Table No. 2

Break-up of Expenditure of Institutions (1976-77)

In Rupees at current prices

Institutions	Salaries		Total salaries	Other expenses	Total expenditure
	Teaching staff	Non-teaching staff			
	%age	%age	%age	%age	%age & Rs.
Morning Colleges					
1. Miranda	74.9	17.5	92.4	7.6	100.0 33,05,264
2. Deshbandhu	68.7	18.4	87.1	12.9	100.0 29,70,310
3. Laxmibai	78.1	13.1	91.2	8.8	100.0 22,93,739
4. Rajdhani	74.1	16.6	90.7	9.3	100.0 24,02,058
5. Satyavati	71.8	17.4	89.2	10.8	100.0 12,71,505
6. Shyamlal	69.4	20.7	90.1	9.9	100.0 19,14,395
7. Hindu	72.8	11.6	84.4	15.6	100.0 24,20,326
8. G.D. Salwan	67.2	21.5	88.7	11.3	100.0 11,51,396
9. S.R. College of Commerce	73.1	14.1	87.2	12.8	100.0 20,78.925
10. St. Stephen	61.3	23.3	84.6	15.4	100.0 20.41.878
TOTAL	71.5	17.2	88.7	11.3	100.0 218,49,796
Evening Colleges					
1. Ramlal Anand	63.0	24.9	87.9	12.1	100.0 5,60,151
2. Shyamlal	66.6	19.4	86.0	14.0	100.0 8,48,191
3. Satyavati	66.6	21.4	88.0	12.0	100.0 6.36,714
School of Correspondence Courses	31.6	33.4	65.0	35.0	100.0 44,05,437
Non-Collegiate (Women) delegacy	65.4	17.6	83.0	16.9	100.0 10,01,090

Table No. 3

An Analysis of Expenditure per Student in Delhi University (1976-77)

Name of the College	Total Expenditure	No. of Students	Expend. per Student Enrolled
1	2	3	4
			Rs.
Regular College			
(a) Morning Colleges			
1. Miranda	33,05,264	2,247	1471.0
2. Deshbandhu	29,70,310	1,567	1895.9
3. Laxmibai	22,93,739	1,680	1365.3
4. Rajdhani	24.02,058	1,409	1704.8
5. Satyavati	12,71,505	1,036	1227.3
6. Shyamlal	19,14,395	1,475	1297.8
7. Hindu	24,20,326	1,749	1383.8
8. G. D. Salwan	11,51,396	899	1280.8
9. S. R. College of Commerce	20,78.925	1,350	1539.9
10. St. Stephen	20,41,878	1,032	1978.5
TOTAL	218,49,796	14,444	1512.7
Evening Colleges			
1. Ramlal Anand	5,60,151	806	694.9
2. Shyamlal	8,48,191	752	1127.9
3. Satyavati	6,36,714	642	991.8
TOTAL	20,45,056	2,200	929.6
Non-Collegiate	10,01,090	8,894	112.6
School of Correspondence Courses	44,06,437	13,474	326.9

(Continued from page 197)

If there is a will, the continuous Internal Assessment system can be improved on the following lines and its validity, reliability and respectability can be ensured to a great extent.

(1) Marks obtained in the internal assessment and external examination conducted by the University may be shown separately in the certificate instead of adding them up as is being done today.

(2) Better still, the very practice of sending continuous internal assessment marks to the University can be given up. Instead, the colleges would use the internal assessment results to recommend students for University examinations. Thus continuous internal assessment can be used as basis for a compulsory screening of students at the college level.

(3) Yet another device to avoid discrepancies caused by standard variations and irrational distribution of marks in the continuous internal assessment, is to introduce scaling of marks. The method of scaling recommended by Dr. Edwin Harper appears to be most suitable where evaluation is done in terms of marks instead of grades. In this method the marks obtained by the student at the external examination conducted by the University are taken as the standard. The marks awarded by the teacher in continuous internal assessment are not reported to the University. Instead, each teacher would list his students subjectwise in their rank order of merit and only this rank order would be communicated to the University. At the University level the external marks obtained by students in each subject are arranged in their rank order. Scaling is done on the basis of the rank order of students in the continuous Internal assessment and rank order of marks in the external examination. After having prepared the two lists the first ranking student in the continuous internal assessment list is awarded the first ranking marks in the external examination list as his internal marks. The combination of this with his external examination marks would be his final marks. The student who is placed in the first rank in the internal assessment list may not necessarily receive the highest marks in the external examination list and vice versa. This method of scaling would minimise, if not altogether abolish, the several serious drawbacks inherent in the manner continuous internal assessment marks are awarded at present. □

Physics and Metaphysics

S. V. Murthy

Physics deals with matter in its various forms and also energy. The study of the finer points beyond the ordinary, i.e., the higher reaches of Physics, leads to metaphysics. Examples are the study of the symmetry in nature in crystallography, the physics of the limit of matter, the limit of velocity etc.

Broadly speaking, Physics is the science of natural laws. Nature reveals itself through its various laws and the Physicist makes new laws or theories to incorporate the physical phenomena. This is one of the methods of the growth of science. Among the theories, the simplest is always chosen for, as it is said, Nature is pleased with simplicity. A theory is a working thought model of the universe based on rationality and then experiments may be done to justify. This is another method of the growth of science. A good theory is the hallmark of physics thought and working. For example, the universe is said to have started with a big bang and is now said to have attained a steady state.

Many developments of this century border on metaphysics only. Physics is characterised by accurate measurements of all its quantities. Bringing the limit of accuracy of experimentation to the next decimal point is always hailed as a big achievement. But the famous Uncertainty Principle of Heisenberg sets a limit to the accuracy attainable in physics experimentation. This approximation is inevitable in the very process of measurement due to the interaction of the observer and the observed. In the measurement of angular momentum and velocity, the accuracy is limited by the relation,

$$\Delta p.\ \Delta q +$$

where $h = h/2\pi$ and h is the Planck's constant. Similarly, measurements of time and energy are limited by the relation

$$\Delta E.\ \ \Delta t \sim h$$

Another aspects is the duality of matter and waves. Particle aspect and wave aspect of matter are complementary. Matter sometimes behaves as a particle and sometimes as a wave and the relation between them is,

$$\lambda = \frac{h,}{m\ v,}$$

where λ is the wavelength of the matter wave, m is the mass of the praticle and v its velocity.

It was proved by Relativity Theory that matter and energy are interconvertible,

$$E = m\ c^2,$$

where E is the Energy, m is the mass and c the velocity of light. But this relation, though general, does not answer when matter gets converted into energy. According to Democrites of Greece, the Atom was the indivisible particle. But this century showed that the atom consists of a nucleus round which there are electrons hovering. The nucleus itself consists of protons and neutrons, quarks and mesons etc. The natural philosophical question arises—, "Where is the limit to this endless divisibility of matter." According to the present-day theory, there are smaller particles than the quarks, the Femtons (10—^{15}cm.), Attons (10—^{18}cm.) and Besons (10—^{20}cm.). The Beson is the limit of matter. Smaller than Besons, matter diffuses into energy. The converse process is also ture. Energy accumulates into matter from Beson upwards.

Another interesting aspect is that the limit of velocity is set by the velocity of light. But now particles moving faster than light called, "Tachyons" are posulated. The Tachyons have surprising properties—their mass and energy decrease to zero as their velocity approaches infinity !

In classical thermodynamics, there is the tantalising problem of the perpetual motion machine. It has been ruled that such a machine is impossible.

Thus we have outlined how the developments in this century in the frontiers of physics have all bordered on metaphysics. In this race for development, a word of caution is necessary. New discoveries and inventions in science must not harm humanity, like the experiments on the mutation of the genes. The flare for doing something new must be moderated by this consideration. As Einstein has said, "When you write your diagrams and equations, try to look beyond what there is in black and white." ☐

CONVOCATION

Planned Growth of Education

Today universities the world over are passing through a crisis. They have to answer public questioning about their goals, priorities and functioning, and face a severe financial crunch. While the role of universities in training cadres for diverse fields, advancement of knowledge, and creating a cultural awareness is recognised, and even given increasing importance, it is argued that the university system has become too large and flatby, and the academics are either too smug and self-satisfied, or do not work hard enough to justify their salaries or are little concerned with the problems of the common man or the community. Some people think that the universities as constituted at present are out of data : they can no longer contribute significantly to research and that much of what they teach is out of date. Unable to answer these criticisms, most recent books in the West on high education take a gloomy view of the future of universities.

As is so often the case, many of our "thinkers" repeat the criticism of the university system in the West, and apply it to our universities mechanically. As compared to the West, our universities are hardly developed, and have a poor infrastructure for high level teaching and research. In fact, they have hardly broken out of the colonial mould which tried to make our universities mere purveyors of knowledge generated by our Imperialist masters. Hence, there was no emphasis on research or critical thinking in our universities. It is this problem of underdevelopment which we have yet to tackle. For the fulfilment of our national goals and objectives, we need a planned and systematic strengthening of education at all levels. This must include higher education, since higher education not only trains teachers for the other sectors but also plays a crucial role in national development. In fact, development of higher education is an index of national development and this is even more true in an underdeveloped country such as ours. Hence, to counterpose higher education to primary or adult education would be as wrong and harmful as counter-posing industrial growth to agricultural development or to counterpose light industry to heavy industry. Both have their role to play and neither can be neglected.

The University Grants Commission recently tried to take stock of the situation in the field of education, and put forward a strategy for change and development of education during the next 10 years. In its document "*Development of. Higher Education — A Policy Frame*", it underlined the need for a drastic over-haul of the system and emphasised three aspects: "a transformation of its character through the introduction of a modern scientific outlook and other essential measures to suit our national needs and aspirations ; a substantial improvement of standards; and an extension of its coverage so that the education of the people becomes...a central object." At the University stage the document laid emphasis on regulating access to higher education, raising standards of education and research, restucturing of the syllabi, and diversification and decentralisation.

Despite many problems and difficulties, there has been substantial progress in these fields during the Fifth Plan. During the period 1974-79, i.e. the period originally indicated as the Fifth Plan period, the average growth rate of students enrolment has come down to 3.5% the compound rate being 2.5% as against the earlier growth of 12 to 14%. Simultaneously, enrolment in private study and correspondence courses specially at the undergraduate level has registered a very substantial increase. According to information received from 72 universities, at the B.A. and B.Com. levels, private students and correspondence course students form about 40% of the total. The decline in the rate of growth of students enrolment is, of course, not good in itself. But it provides us an opportunity for utilising scarce resources not for setting up new colleges to cope with the new students enrolment but for improving standards in the existing institutions. It is unfortunate that in a few states while the growth rate of students enrolment has been minus or near zero, many new colleges have been opened, despite the fact that in these states about 50% of their existing colleges are non-viable, i.e. they have poor enrolment and poor facilities. It is sometimes imagined that the opening of new Universities and Colleges depends on the UGC. As everyone knows, education being essentially a state subject, it is for State Governments to heed the advice given by the UGC in national interests and for the maintenance of standards. All that UGC can do if state governments do not heed the advice of the UGC is not to give central grants to institutions set up in violation of UGC guidelines. Generally speaking, UGC does not give grants to non-viable colleges set up after 1972 if they do not fulfil all the conditions of affiliation. I am happy to say that many states have been responsive to the thinking of the UGC. However, new pressures are building up in many states. It is necessary that Central and State Governments resist the unacademic demand for yet more colleges without a survey of facilities at the district level, which do not even promote social justice but leads to lowering of standards.

The guidelines issued by the UGC have helped in bringing down the rate of establishment of new colleges from two per week in the earlier Plans to two per month in the Fifth Plan. The UGC is not opposed to the establishment of new colleges to cater to the needs of Scheduled Tribes and Scheduled Castes and has, in fact, liberalised its condition, for grant to colleges catering to scheduled castes/scheduled tribes students.

Growth of science enrolment in study and research is an index to the growth of a country and its potential. Understandably there has been a great deal of concern about the declining trend in science enrolment in recent years. However, I am glad to say that during the Fifth Plan period, this trend has been arrested and reversed. The UGC has been able to play some little role in this welcome development by proving grants on a generous scale for laboratories, workshops and scientific equipment to undergraduate colleges. However, the negative trend may reappear if cuts in higher education led a reduced allocation for science teaching and research in universities and colleges. Of course, growth of industry and agriculture, and suitable opening for scientists, is the most important factor. A closer co-ordination between higher education and man-power planning is therefore necessary.

Teachers are the vital basis for improvement of standards. The U.G.C. allocated 24% of its funds in the Fifth Plan for faculty positions in universities so as to develop new branches of knowledge and to strengthen the existing ones. As a result, in the universities, teacher-pupil ratio as well as the proportion of senior faculty positions have improved. However, I would like to underline that though the Commission agreed to fund the new faculty positions till 1981, i.e. two years after the Plan would have been over, many State Universities have not received the approval of the State governments for all the faculty positions even now. This is a major reason why State Universities lag behind the Central Universities and the disparities between the two continue to grow. One of the projects of the Commission during the Sixth Plan was to raise about 20 selected State Universities to the level of developed universities by providing them development fund where necessary, on the same basis as Central Universities. The commission has not given up this project but it has had to modify it drastically in view of the present attenuated fund position in the central sector. In view of this, the share of the states would have to be increased and the scale of assistance to the developing universities would be less than visualised earlier. However, since Government has decided to recast the draft of Sixth Plan, I hope that the position will be rectified so that a cut in funds for higher education in the name of social justice does not lead to the development of further disparities within the system, and a set back to national development.

It is obvious that no improvement of academic standards would be possible without close co-operation between the Central and State Governments and the U.G.C. A national system of education cannot develop if state governments adopt policies which go counter to nationally accepted policies. In some cases, State Governments have modified existing policies without consulting the universities in the State or even against the advice of the U.G.C. As a result, encroachment on the autonomy of the universities has assumed serious proportions in some states. This needs a national debate and reconsideration. It would appear that the decision of some state governments to assume the responsibility, directly or indirectly, of appointing or promoting university teachers has hardly led to the induction of teachers of a higher calibre, nor made the selections truly national. On the other hand, it has led to great delays and the attendant evil of ad hoc appointments on a large scale. Proposals in some States to provide for the transfer of university teachers would, if implemented, create the danger of harrassment of good teachers, growth of groupism in the staff and entry of state politics into the day to day running of the universities. Nor can universities function if, instead of supporting and strengthening the position of the Vice-Chancellor, legislative steps are taken to make him even more dependent on government or on changing political winds in the State. Although education is on the concurrent list, no steps have so far been taken by the Central Government to study the problems of higher education in an integrated manner. A new initiative in the matter appears to be urgently necessary. The U.G.C. would, of course, be happy to co-operate with government in the matter.

I strongly feel that in order to get full public co-operation in strengthening the universities, the universities will have to take urgent steps to put their houses in order. I would like to mention some of the urgent tasks which, I feel, should be tackled immediately.

(i) There is no satisfactory machinery of planning in the universities. The Vice-Chancellors, unfortunately, are too busy with day-to-day administration, or with fire-fighting operations. Agitations, gheraos etc., consume most of the their time. As a result planning is done by fits and start. Moreover the university, community i.e. teachers and students are hardly involved in the Planning process. The University should set up Planning Board which may be headed by Pro-Vice-Chancellor or Dean of Planning. While the Board should report to the Vice-Chancellor, its main function should be to prepare a perspective plan for 10 to 15 years. This should indicate the optimum number of students at various levels, academic targets, expansion programmes etc. These could then be broken down into Plan targets and annual Plans.

(ii) There is little attempt at continuous monitoring of programmes and schemes. As a results, programmes are pushed to the last year of a Plan which often leads to infructuous or wasteful expenditure Let me give you an example. A well developed university in the Western zone, which had a plan grant of Rs 40 lakhs for books and equipment, spent on an average less than Rs 3 lakhs per year in the first four years of the Plan leaving Rs 28 lakhs to be spent in the last year. Since many universities had spent their funds the same way, the U.G.C. could not meet the demands, thus increasing the spill-over of the Sixth Plan and reducing the money it would have given to the universities otherwise.

(iii) The functoin of Registrar's offices needs considerable improvement. The Registrar's offices have become bottlenecks in many cases. They are neither able to efficiently serve the academic community nor provide timely information. Schemes and programmes of the U.G.C. are often not communicated to the academic community in time nor is information asked for by the U.G.C provided in time. Things can no doubt be improved by adopting modern methods of management, with provision for delegation of authority to appropriate levels and flexibility in functioning. The U.G.C. has asked a few Institutes of Management, and the National Administrative Staff College, Hyderabad, to study the university system from this point of view. I wonder whether Calcutta where some of the most prestigious Institutes of Management are located could take a lead in this matter. It could also help in restructuring the university system as a whole.

(iv) Information has been called the key to development in modern society. Unfortunately, little efforts have been made by universities to keep the wider community both within the university and outside, informed of their achievements and failings. At present, mainly negative reports about student indiscipline, damage to public property, mass copying, walk out of examinations etc., are reported in the press. These represent serious issues and problems which have to be tackled in an appropriate manner. However, the positive aspects are generally ignored or given poor coverage. Why is that so? I put this to a gathering of pressmen in a recent seminar at Delhi convened to mark the 200th Anniversary of the Press in India. While admitting their shortcomings in the matter, the pressmen put a counter question: what efforts have the universities or U.G.C. made to communicate regularly with the press? Their querry, in my opinion, is to some extent justified. Traditionally, academics have shunned the glare of publicity. That is not wrong and I would not like teachers to rush to the press for every small thing. However, it is for the administrators in the universities viz., the Vice-Chancellor, Registrar etc., where necessary with the help of an Information Officer or Public Relations Officer, to keep the press and the community continuously informed of the positive developments that have taken place in the university and also to share their problems.

Universities can justify themselves only if they continually innovate, assimilate and disseminate new knowledge, and add to it. Calcutta University has been the leader of many academic ideas and reforms in the past. It has a long and proud academic tradition and has produced many figures of international fame. But a university cannot live in the past: it must continually renew itself and challenge existing ideas and institutions, and work on new frontiers. Calcutta University has a galaxy of able and talented scholars and researchers. It is for the university authorities to create appropriate conditions so that these scholars and researchers show the best results.

Though quantitatively research has grown in our universities in a big way after Independence, and especially during the Fifth Plan, and research in universities is cost effective, the climate of research has not yet fully developed in many of the universities. In many cases, short-sighted and out-moded bureaucratic methods seriously cramp research, and cause avoidable frustration. While 25% of university research is now of an R & D nature, there is still too much research that is repetitive or not relevant to our needs. Even developed universities have hardly used the introduction of 10+2+3 scheme to revise and update syllabi. The syllabi recently circulated by the U.G.C. have yet to be taken serious note of by Vice-Chancellors and by Boards of Studies in Universities. That is where the concept of autonomy within the universities viz, autonomy to faculties and to selected affiliated colleges, becomes important.

These are some of the problems facing us today. I am confident by closer association between the various agencies—the U.G.C., the Association of Indian Universities, Universities and Government both Central and State, we can, if not resolve, improve the situation in many respects, raise standards and create a sense of pride in the Indian University system.

(Excerpts from the Convocation address delivered by Prof. Satish Chandra, Chairman, University Grants Commission, at the Calcutta University recently.)

CAMPUS NEWS

Vice-Chancellors' Meeting at Cochin

The meeting of the Southern Indian Universities Vice-Chancellors held on the 25th February, 1980, at Bolghatty Palace Cochin, endorsed the resolution of the Association of Indian Universities in toto that the examinations of one University should be recognised by another University on a reciprocal basis provided that the entrance qualification, duration of courses and general standard of attainment are similar to those prescribed by the recognising Universities. The meeting also endorsed the resolution of the Inter University Consultative Committee, Kerala, that the degrees. diplomas and certificates awarded by one University in the state be recognised on a reciprocal basis by other Universities, provided that the entrance qualification, duration of courses and the general standard of attainment are similar to those prescribed by the recognising Universities.

Shri T.R. Jayaraman, Bangalore University, Prof. Jafar Nizam; Kakatiya University, Dr K.S. Hegde, Mysore University Shri P. Sivalingam, Perarignar Anna University of Technology, Dr M. Santhappa, Sri Venkateswara University, Shri B.S. Somasundaram, Annamalai University, Dr M. Shanmugha Rao, Jawaharlal Nehru Technological University, Dr V.K. Sukumaran Nair, Kerala University, Prof. K.A. Jaleel, Calicut University, Dr M.V. Pylee, Cochin University—(Vice-Chancellors), Dr K.I. Vasu, Pro-Vice-Chancellor, Cochin University, Shri P.V. George, Hyderabad University and Shri D. Muralikrishna, Nagarjuna University (Registrars) participated in the meeting.

In respect of the insistance and issuance of Migration Certificates, the Vice-Chancellors recommended that the status quo be maintained.

The meeting considered the suggestion of the Vice-Chancellor, Sri Venketeswara University; regarding deletion of Chemistry from the Syllabus of the Medical Students of that University. It was agreed that at the plus two stage the existing syllabus be upgraded on a par with the NCERT in physical sciences. Until this is done, the University, should make special arrangements for teaching and conducting examinations in Physics and Chemistry. There should be uniformity at least in the Universities in the state and general uniformity in all other Southern Universities.

The meeting considered the note circulated by the Vice-Chancellor, Kakatiya University, in respect of relaxation of qualification prescribed for the post of Lecturers in view of non-availability of qualified candidates in certain subjects and recommended that the Universities concerned may refer the matter to the U.G.C. and respective State Governments.

The meeting resolved that the Universities may examine the feasibility of introducing the subject "Defence Studies" at an appropriate level.

It was resolved that the Universities would consider the affiliation of colleges for starting post-graduate courses on a selective basis provided that the Library and Laboratory facilities and staff are assured in advance. The Universities should have control over admission of students and recruitment of staff.

NCERT prepares population education scheme

The National Council of Edu-National Research and Training (NCERT) is shortly launching a national population education programme. Population education would be woven into subjects like science, economics, geography and languages. Educational administrators and teachers would be trained for the job and special materials would be prepared.

Dr S.K. Mitra said the thrust of NCERT activities had recently undergone a change to suit the times, they were now aimed at helping the states in implementing the universalisation of elementary education programmes, inculcating right attitudes towards women and introducing health and nutrition education besides population education.

He said vocationalisation of post-secondary education was yet another reform that was under way. He said Tamil Nadu, West Bengal, Maharashtra, Karnataka and Delhi had introduced vocational programmes, but Delhi had not made much headway in this respect as young people preferred white-collar jobs there.

West Bengal, too, had run into difficulties with its programmes because of lack of advance preparations.

Computer-aided unit to assess UPSC exam papers

The Union Public Service Commission (UPSC) will be receiving in the next two weeks from the UK two sets of "Optical Mark Readers" as a gift from the British Council, representing a computer-assisted system which can read, score and record marks at a speed of 4,000 sheets per hour, by scanning sheets of paper on which the examinees make markings.

Prof. S. Sampath, Member, UPSC, said that the optical mark readers, made by a UK firm, Data Recognition System of London and gifted by the British Council, would have cost about Rs 3 lakhs. The markers have photo-electric sensors for purposes of scanning.

Explaining the need for such equipment, he said the number of candidates appearing for the UPSC examinations, particularly for the Indian Administrative Service (IAS) had increased to more than one lakh. This had obliged the UPSC to hold an entrance examination to "screen" the candidates before they could write the main examination. The very large number of candidates appearing for the examination had made it extremely difficult for the UPSC to rely on conventional methods of correction of the answer papers and recording the marks.

The kind of questions that the candidates to the entrance examination will face will be in the nature of "objective tests." They will be required to mark in a separate sheet the choice of answers they had given.

The markings made by the Optical Mark Readers will be responses to 200-multiple-choice questions on the single sheet. The markers have the processing capacity to identify the candidate by his roll-number and score his answer-sheet and put together all the scores obtained by him in several tests and record the aggregate total.

Prof. Sampath said that the British Council had deputed its experts to participate in a workshop on examination reform held recently in Delhi. He hoped that the other major agencies conducting examinations for recruitment such as the State Public Service Commissions, would also find the portable optical mark readers useful.

Elitist research in Punjab Agricultural University

The Punjab Agricultural University has turned its attention to various elitists research projects which will open immense possibilities in horticulture, forestry and even in the fields of rice and wheat through scientific manipulation of plant species.

The catalyst agent in this regard is the 3-year old tissue culture department of the university which is doing creditable work for sexual propagation and cloning of plants in test tubes. Though the work is still at the experimental stage, but ultimately the results will be applied in the fields. It holds out the promise of high-yielding hybrids and disease resistant strains to farmers and horticulturists. The demonstration stall put up by the tissue culture unit at the recent kisan mela opened by the university had been very popular.

While cloning in human beings and animals has raised ethical, social and religious questions, such genetic manipulation for rapid made-to-order multiplication of plant posed no such problem and it has already become a multi-million dollar industry in the United States and Europe. Dr. Y.P.S. Bajaj, Head of the Department said that the sexual incompatibility, artificial insemination and caesarian operation of plants have proved that such techniques can produce more and better results. By tissue culture new plants which do not exist in nature can be produced and thousands of disease-free identical daughter plants can be obtained from a single mother tissue in a short time. Although initiated half a century ago, the potential of this technique for agricultural research and crop improvement has been realised only recently. Today this science has advanced to a stage where it is possible to obtain an entire plant from almost every part of the mother plant, i.e. from small segments of roots, stems, leaves, buds, flowers, embroys, pollen, isolated cell and even from proplasts or naked cells. The rate of propagation is very fast. For example, to get an orchid flower from a seed, it takes about five years. By tissue culture the period is reduced to less than a year.

Nearly 200 plant species have been grown by this method. In Poland the carnation is a very popular flower and disease-free plants, obtained from stem tips, are available throughout the year. In California alone, there are 25 nurseries which raise more than one lakh cultures per month and produce plants worth $10 million which are sold within the United States. In addition to flowers entire popular trees have been obtained from cells at the Institute of Paper Chemistry in California and the Canada department of Agriculture produces disease-free potatoes from stem-tip cultures. In India, no serious effort has been made so far for the commercial exploitation of tissue culture.

According to Dr. Bajaj, at times difficulties arise when the parents are sexually incompatible. The barrier is overcome in test tube fertilisation involving direct injection of pollen into the young flower. This corresponds to artificial insemination in animals. Another technique is the culture of immature embryos in which the baby is removed at a premature stage and incubated under controlled conditions. Thus new hybrid plants, which ordinarily do not exist in nature, can be produced. For example, triticale, a man-made hybrid produced by crossing wheat with eye, has been produced at the university's experimental farms. This hybrid combines high yield and good quality of wheat with disease-resistance and high protein content of rye. Three varieties of triticale have been produced which are as high-yielding as the best wheat varieties. It has proved to be good feed for poultry and other livestock and excellent for biscuit-making. Experts are confident of releasing the seed of this hybrid for field trials in two or three years.

FAO Chief addresses PAU Convocation

The Director-General of UN Food and Agriculture Organisation Dr. Edouard Saouma said in Ludhiana that the reshaping of policies of agricultural universities in the Third World could go a long way in serving the rural poor. Such a direction would be in keeping with Mahatma Gandhi's tradition of seeking out the lost, the lowest and the least.

Dr. Saouma was addressing a special convocation held by the

Punjab Agricultural University. The University awarded Dr. Saouma an honorary doctorate.

Referring to Asia's food problem he said that the agricultural universities could play a big role in solving this problem. What should probably engage increasingly the attention of our agricultural universities are the subtle but very real non-technological barriers to a production breakthrough. He appreciated the role of PAU in boosting the Indian food production over the past few years. He said that the question today is whether the agricultural universities can move deliberately into a policy of serving, not merely the fittest but helping the weakest. The life of an Asian farmer was extremely complex. Besides there were sharp differences in the perception of decision-markers or educators and villagers. This difference persisted because many of the faculties and students rarely had the opportunity of looking beyond the needs of their model farmers. This was aggravated when faculy members tend to teach and do research on what is fashionable internationally. He emphasised that our academic practices should not produce small elites alien to the people they are supposed to serve.

Farmers Committee for PAU

Dr. Amrik Singh Cheema, Vice-Chancellor, Punjab Agricultural University, has constituted a farmers' committee which will focus the farmers problems to the notice of the various authorities of the university and assess them in seeking solutions. The Vice-Chancellor himself will be the Chairman of the committee. The Director of Extension, PAU will be the convener. The other members are mostly the farmers from the various agricultural districts in the State.

Dr. Cheema has emphasised the need for the use of solar energy to the maximum capacity. Earlier, the farmers had urged the university to undertake intensive research in the field of solar energy. Dr. Cheema has assured that the research activities on the use of the solar energy would be intensified.

Honours for 14 Agricultural scientists

Fourteen agricultural scientists were awarded the Jawaharlal Nehru awards by Mr. R.V. Swaminathan, Minister of State of Agriculture in New Delhi. The awards for outstanding postgraduate research in agriculture have been given by the Indian Council of Agricultural Research for 1979. The recipients of the Jawaharlal Nehru awards are: Dr. Baljit Singh Ghuman, Dr K.P. Joy, Dr. P. Sen, Dr. Hari Shankar and Dr. Manjit Singh Mahal.

The Hari Ashram Trust award for agricultural research went to Dr S. Jayaraj.

Dr J.N. Pandey, Dr. Man Mohan Nath Razdan, Dr. C.M. Singh and Mr S.C. Modgal received the *Kheti* Puraskar for 1978-79.

Guinnes Award for scientific achievement in the service of community was given to Dr. Dev Raj Bhumbla, Dr. Jai Singh Pal Yadav, Dr. Inder Pal Abrol and Dr. Karan Singh Dargan.

UGC concern at increase in "non-viable" Colleges

The University Grants Commission has advised state governments to convert some of their even viable colleges into rural polytechnics and also conduct surveys to evolve a policy regarding location of future colleges.

A viable college, according to the University Grants Commission, is one having an enrolment of 400 students or more after excluding pre-university/pre-professional and intermediate enrolments. In States having two-year degree courses in arts, commerce and science, the college must have 270 students to be deemed viable.

Against 1,396 non-viable colleges in 1973-74 there were 1,433 such colleges in 1977-78. The existence of such a large number of non-viable colleges, many of which are located in the rural areas, not only act as a drag on standards but has serious social implications. Standards in these institutions are low because they have not been provided proper facilities by the State governments before granting them recognition and because they are unable to find good teachers. Consequently the students who pass out from these institutions feel handicapped and suffer from a sense of insecurity. The analysis show that the States where the number of non-viable colleges has gone up by 50 per cent are Andhra Pradesh, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Punjab, Assam, Bihar, Manipur, Meghalaya, Nagaland and Orissa.

Another matter of serious concern to the University Grants Commission is the proliferation of postgraduate colleges. Of 612 postgraduate arts, science and commerce colleges, Maharashtra, Uttar Pradesh and Madhya Pradesh accounted for 365 or 60 per cent. Seven States comprising these three and Tamil Nadu, Kerala, Rajasthan and Punjab account for 543 or 89 per cent of the growth in numbers. According to the University Grants Commission the education standards cannot be maintained if such a large number of PG colleges are sought to be established by some of the state governments in addition to a large number of universities. The Commission would prefer postgraduate courses being taught in universities rather than in separately created colleges. Another vexing problem is strain on old universities because of the inadequacies in the new ones. This strain manifests itself most glaringly in the disparity between various universities in the number of students directly on the rolls in the teaching departments. Only six universities —Lucknow, M.S. University of Baroda, Banaras, Calcutta and Aligarh—had an enrolment of more than 10,000 students (undergraduate, postgraduate, law, professional courses combined) being taught directly by university teaching departments. The highest number was 19,012 in Lucknow University, including 5,860 law students and the lowest was Bhopal University which had an enrolment of only 57 students.

Jiwaji University was somewhat better off with 113 students on the rolls. Quite clearly a balance has to be achieved in the growth of the smaller and newer universities vis-a-vis the old and trusted ones. New universities set up to cater to regional needs entail a much higher per capita expenditure both plan and non plan as compared to many developed universities. The growth in numbers in higher education is evident from a survey of the increase in the number of institutions and enrolment. In 1961-62 there were only 49 universities and 1,783 colleges with 6,63,661 students. In 1977-78, there were 105 universities, 10 institutions deemed to be universities, 4,610 colleges and a whopping students on the rolls. In the sixties, university-level enrolment increased by about 12 to 15 per cent per annum. It dropped to nine per cent in 1970-71 to 5.9 per cent in 1974-75 to 2.5 per cent in 1975-76 and to 0.2 per cent in 1976-77.

Academy of Oriental Studies for Sri Venkateswara University

The University Grants Commission has not agreed to the proposal of the State Government for the establishment of a Sanskrit University in Andhra Pradesh. Mr N.S. Reddy, Director of Higher Education, had urged the Government to reconsider the desirability of starting academy of oriental studies to function under Sri Venkateswara University with the support of Tirumala Tirupati Devasathanam. The Education Minister and the Director of Higher Education have also suggested that all the oriental colleges and music colleges might be affiliated to the proposed university.

UGC Text Books

The University Grants Commission is preparing 450 university level books, most of them on science, engineering and technology to provide quality books for universities and colleges. Manuscripts of 127 books have already been completed and 24 of them have been published. These books are being written by teachers and research scholars of institutions of higher learning in the country with financial assistance from the Commission. Among the various subjects, engineering and technology account for the maximum number i.e. 54 out of which manuscript for 22 have already been completed. Bio-Physics ranks next with 12 completed manuscripts and 25 under preparation, mathematics and statistics come third with 10 and 17 respectively. For languages, literature and linguistics manuscripts have been completed while 43 projects are under implementation.

UGC Programmes under review

According to newspaper reports, the University Grants Commission is considering a proposal to revise the amount of fellowships granted to research scholars with a view to attracting bright students. A comprehensive review of the various programmes is also under way. Committees are being set up for the four zones. They would be visiting the universities as part of the review exercise. They would also go to the colleges. The review exercise showed the need to monitor funding critically. While the UGC should define its priorities, the universities must outline theirs, make allocations and monitor the impact of projects. The thrust of the programmes are on raising some university departments to the level of Centre of Advanced Study on account of the quality of world work performed, enabling some departments to receive special assistance giving departmental support for some others. The UGC is also concerned with the quality of Ph. D.s turned out by the universities due to great variations in the number of doctorates coming out from universities.

Bhatia's Plan for better training of Journalists

A two-pronged approach to improve training in journalism was suggested by the Editor-in-Chief of the Tribune, Mr Prem Bhatia in the course of the first Prof. P.P. Singh Memorial Lecture delivered at the Maharshi Dayanand University, Rohtak. Mr Bhatia said that it was essential that admission to the existing courses of journalism of the universities should become much more selective so that wastage is reduced to the minimum. Secondly, newspapers and news agencies for their part should become more cooperative in providing practical training to students from approved institutions.

While the present standards of journalism education were far from satisfactory, it was wrong to think that academic training in journalism received at the university stage is a waste. Judging from the extensive ignorance among the present generation of journalists, especially those working at the news desk, the journalists of the future could do with more knowledge of the world and with a broader base of information. Among the most common failings in the journalists today was ignorance of history and geography. They also had little or no knowledge of the law of the land with the result that they involved their newspapers or news agencies in avoidable cases of donation and contempt of court. Preparatory education at the university stage could remove these deficiencies to a large extent provided there were properly qualified teachers and wisely planned curricula.

Mr Bhatia mentioned the outline of a scheme which, in his opinion, could meet the requirements of academic education and practical training in journalism. He suggested the setting up of three or four institutions of training with the active participation of newspapers themselves. Each of the newspaper concerned would take a limited number of apprentices every year keeping in view their own future requirements and the requirements of the profession as a whole. He said that the persons in command of the profession should realise that they have a responsibility to the profession apart from the need to promote opportunities for proper training to their own interests. Such institutions of training should have a separate section for apprenticeship in Indian language apprenticeship. Newspaper chains such as those owned by the Jain, Birla and Goenka groups which have publications in more than one language could more easily implement this scheme than newspapers which publish only in one language.

Four Agricultural Scientists Honoured

The four Indian scientists who have been awarded the Commonwealth Guinness Award for scientific Achievement have been associated with the Central Soil Salinity Research Institute of CSIR for a long time. The four scientists are Dr. D.R. Bhumbla, founder Director of C.S.S.R.I., Dr. J.S.P. Yadav, its present Director, Dr. I.P. Abrol, Head of the Division of Soils and Agronomy and Dr. K.S. Dargan, Senior Agronomist.

Dr Bhumbla was born on December 6, 1921, in Malewal village in Hoshiarpur district. After he had worked in various capacities in the Punjab Agricultural Department and Punjab Agricultural University, Ludhiana, Dr Bhumbla was appointed founder Director of the Central Soil Salinity Research Institute. He played an inportant role in laying out the research farm and in building the institute.

Dr Bhumbla became Deputy Director-General (Soils Agronomy and Engineering) of the I.C.A.R. where he worked till August, 1978.

He is a joint winner of the Rafi Ahmed Kidwai Award 1972-73 for his work on salt-affected soils. He has over 100 publications to his credit. At present Dr Bhumbla is Vice-President of the International Society of Soil Sciences.

Dr Jai Singh Pal Yadav was born on July 30, 1922, in Akhepur village in Aligarh district. He served U.P. Government from 1947 to 1956 in various capacities. For over a decade he worked at the Forest Research Institute, Dehra Dun. Later he joined the staff of the C.S.S.R.I.

Dr Yadav took over as Director of the C.S.S.R.I. in 1974. Under his guidance the institute has made great strides in finding solutions to the problem of soil salinity and alkalinity. He has published over 130 papers. He is a recipient of the Schlich and Brandish Memorial Awards and the Australian Cultural Award.

Dr I.P. Abrol, has worked on various aspects of reclamation and management of alkaline soils. He was awarded the Rafi Ahmed Kidwai Award for 1972-73.

He was a member of the expert team sent by the Government of India to Iraq to advise on salinity problems. He is the Vice-Chairman of the Soil Technology Commission of the International Society of Soil Science. He has published over 100 papers and is the author of four technical bulletins published by the institute.

Dr K.S. Dargan was born on February 10, 1921, in Dargan village in Montgomery district (now in Pakistan). He graduated from Khalsa College, Amritsar, and did his M. Sc. from Panjab University and was awarded the Ph.D, degree by the University of Calcutta.

AN AGRONOMIST

He worked on the agronomic problems of the cotton and oilseed crops at Sirsa. He is responsible for introducing the jute-paddy-wheat rotation system in West Bengal. Since 1970 Dr Dargan has been working on reclamation and crop production in salt-affected soils. His work is concerned with the optimum management requirements of crops grown in alkaline soils. He has published nearly 100 papers.

Calicut earmarks 40 lakhs for new departments

Mr. P.V. Shankaranrayan, Chairman of the Finance Committee of the University of Calicut while presenting the budget before the Senate of the University expressed the hope that the Government while fixing the non-plan grant to the university would take into account the additional expenditure of Rs 1.5 lakhs provided for new posts and pay revision and other financial commitments. The university has made a provision of Rs 40 lakhs for starting new departments and for strengthening existing departments with equipments, additional staff and books and journals. The university anticipates during the year a grant of Rs 137.9 lakhs from the State Government including 35 lakhs on plan account. There is a provision for the construction of two hostels, one for men and the other for women and for providing better water supply in the campus. A sum of Rs 25.40 lakhs has also been earmarked for fellowship grants, maintenance of hostels and other miscellaneous expenditure. A special allocation of Rs 37 lakhs has been made for a zoological experiment garden, marine biological laboratory and research journals under the zoology department of the university.

The draft Sixth Plan proposals which were also placed before the Senate envisage an expenditure of Rs 3.5 crores for various development programmes. The major thrust however would be on the development of the existing staff besides starting new departments like Anthropology, Archaeology Museology, Computer Science, Continuing Education and Correspondence Education, Wood Science and West Asian Studies.

Social Scientists urged to direct developmental activities

Prof. G. Ram Reddy, Vice-Chancellor, Osmania University said in Hyderabad that the social scientists should help the policy formulators and decision makers in identifying reasons for the low development of the country and suggest new approaches to increase the tempo of development. He was releasing English, Telugu and Social Science Publications of the department of political Science and Public Administration of Osmania and Kakatiya Universities. Prof Reddy said that the findings of social science research should be made available in the form of books at a low cost. Mr M.R. Pai, Commissioner of Institute of Administration, who presided over the function, said that further research on the implementation aspect of the socio-economic has to be done. Prof. Zafar Nizam, Vice-Chancellor of Kakatiya University, stressed the need for the development of inter-university collaboration in such research projects.

Many new courses at Madurai University

Dr V.Sp. Manickam, Vice-Chancellor of Madurai Kamaraj University said that the Syndicate of the university has decided to introduce MEd course in the Institute of Correspondence and Continuing Education from the academic year 1980-81. The Academic Council had earlier approved the starting of the following new courses from the next year : BA in Muthamizh and a diploma course in musicology. A new optional subject 'human relations' has been introduced for M. Com. course. The Council also approved a proposal to introduce industry-oriented courses of the ancillary level in the undergraduate degree courses. The courses have been introduced based on the industrial needs and potentialities of the industries in various towns under the jurisdiction of the university. They will begin from the second year of the degree cours i.e. from 1981-82. For certain university examinations after getting necessary exemptions, blind candidates will be permitted to appear privately. Postgraduate students can improve their internal assessment marks and external marks by reappearing for the examinations in the papers concerned. Teacher candidates with B. Com. degree may appear privately for M. Com. under certain conditions. School teachers who have completed their SSLC may appear for B. Lit. degree in Tamil after private study.

58-lakh deficit in Bombay University Budget

The Budget Estimates of Bombay University for the year 1980-81 were presented at the annual meeting of the Senate held in Bombay recently. An income of Rs. 753 lakhs as against an estimated expenditure of Rs. 811.25 lakhs shows a deficit of Rs. 58.25 lakhs in the proposal. The development programme launched as part of the fifth plan schemes, as proposed to be completed in a budget of Rs. 172.36 lakhs. Schemes of the U.D.C.T. plans for teaching and research and the development of management education are expected to be completed with finances from this budget.

Among the welfare programmes proposed is the most innovative scheme which envisages the provision of loans to university employees for the purpose of cooperative housing. A sum of Rs. 10 lakhs has been provided for this purpose.

Rs. 25 lakhs has been set aside as development funds, Rs. 10 lakhs for efficient conduct of examinations and Rs. 5 lakhs for the construction of a new administrative building in the Kalina campus.

New Vocational University in the offing

A new university, the first of its kind in the country, to impart job-oriented-cum-technical education for youth is being established in Maharashtra. It is expected to cost Rs seven crores and a large number of educationists, philanthropists and political leaders have assured their cooperation in setting up this institution.

Some philanthropic institutions in Sweden, Norway, Denmark, West Germany, the Netherlands, France, the UK, Canada, Japan and oil-rich Arab countries have also expressed their desire to assist the project. It is expected that Rs 6 crores in the form of donations at the initial stage will be made available from these countries and the United Nations.

The proposed university will impart basic technical knowledge at a nominal charge. A student after getting employment or starting his factory will be required to repay for 15 years a sum of Rs 150 to Rs 200 a year when he starts earning Rs 20 or more a day. This will enable the university to have a constant income over the year. Basic training will be phased in such a manner that the institute will turn out about 3000 workmen every year capable of taking up skilled or semi-skilled industrial units of their own.

Cytogenetics seminar held in Patna

A three-day All-India seminar on recent methodological approaches in cytogenetics was recently held in Patna under the auspices of the University Department of Botany. About 100 eminent scientists from all over the country participated in the deliberations of the seminar.

The seminar discussed the current trends in basic and applied cytogenetics in the light of recent sophisticated instrumentation in cytogenetical investigations and recommended measures to upgrade the teachings of cytogenetics in the university.

Evaluation procedures of theses to be reviewed

The Calcutta University authorities have constituted a 16-member committee for streamlining the present regulations with regard to the examination of theses for Ph.D.,D.Sc. and D. Litt. The first meeting of the committee was held recently in Calcutta under the chairmanship of Dr R.K. Poddar, Vice-Chancellor of the University. He said that the idea was to publish the results promptly for the benefit of the candidates. Dr Poddar said that after a thorough review the committee might draw up fresh regulations mainly to avoid delay in publication of results. He suggested that theses submitted by candidates should pass through an initial process of screening.

Darbhanga to publish 5000 Sanskrit manuscripts

The K.S. Darbhanga Sanskrit University has drawn up a plan to publish 5,000 rare manuscripts on ancient learning including some original works of the great poet Vidyapati. Dr Mahendra Thakur, Registrar of the university said that the publications of the manuscripts would cost about Rs 25 crores and it is proposed to bring out these publications in a phased manner. About half a dozen manuscripts had already been published and an equal number was under print. Dr Thakur said that the Raj Darbhanga had alone donated about 4000 manuscripts and some of them dated back to 1000 A.D.

Varsity staff demand parity in pay scales

The Tamil Nadu University Employees' Federation has demanded identical pay scales for ministerial staff of different universities in the State, representation in the governing bodies, housing facilities and employment opportunities in the universities for their wards. The Federation adopted a ten-point charter of demands at its meeting held in Madras recently. Representatives of non-teaching staff of the four universities in the State participated in the meeting. It was recommended that the disparity in the pay scales of the staff should go immediately. It also urged the Government to give more loans to the staff to enable them to construct the houses. The federation wanted the active participation of its members in the Senate, Syndicate or Managing Boards of the universities since they were directly engaged in the administration of developmental projects and canalisation of funds.

It also suggested that the vacancies in the posts of Registrar and Finance Officer should be filled by staff from within the university and the practice of bringing personnel from the Government should not be continued further The meeting wanted the Government to extend educational fee concession to the wards of university employees and grant them leave travel concession.

Bangalore proposes incentives for staff

The Bangalore University will introduce special incentive schemes for the teaching as well as the non-teaching staff of the university from the academic year 1980-81. The scheme is meant to remove the stagnation in the pay scales of the teaching and the non-teaching staff and create better promotional avenues. The scheme also includes the institution of fellowships to the university teachers to encourage them to take up research work. A sum of Rs. 2 lakhs has been provided under the incentive scheme in the financial estimates of the university for 1980-81. Allocation of Rs. 10 lakhs for a special scheme for SC/ST students, a sum of Rs. 8 lakhs for the pension scheme started by the university for its teaching and non-teaching staff, Rs. 9 lakhs for the annual maintenance and Rs. 10 lakhs for the special repairs for the city campus are some of the other highlights of the financial estimates. The total estimated expenditure of the university is about Rs. 560 lakhs as against the anticipated receipts of Rs. 561.99 lakhs.

A Master's degree in sericulture will be introduced in the university from the academic year 1980-81. Mr. K. B. Munivenkata Reddy, Member of the Syndicate and the Finance Committee, while placing the financial estimates for 1980-81 stated that the State Government had granted Rs. 50 lakhs to the university for research and development of sericulture. The finances granted under the assistance of the World Bank would be spread over a period of five years. The university had decided to earmark Rs. 5 lakhs for this allocation for starting the postgraduate course in sericulture.

Special attention to colleges in backward areas

The Andhra Pradesh Education Minister, Mr. B. Venkatram Reddy, has announced that the State Government will soon prepare master plan for establishing colleges in economically and academically backward areas. The State Government was also giving serious thought to the question of introducing reforms in the existing examination system. To gather expert opinion on this question, a seminar was being organised in Hyderabad. Eminent educationists from different parts of the country will participate in the seminar. Teachers' representatives and others would also be invited. The Government would take a policy decision on the implementation of this reform from the next academic year.

The Government is also considering the question of appointing a committee to revise text books. The vocational education has already been introduced at the intermediate level and the response so far has been very encouraging.

Personal

1. **Prof. A.K. Banerji, Head of the Department of Journalism and Mass Communication of the Banaras Hindu University, has been elected President of the second Indian Journalism Congress in the seventh annual session of the Indian Journalism Education Association. Prof. L.N. Gohale of Poona University has been elected General Secretary of the Association.**
2. **Dr. T.M. Ameer Ahamed, Associate Professor in Civil Engineering of the Engineering College of Bangalore University has been awarded a Certificate of Merit and a cash prize by the Institution of Public Health Engineers, India.**
3. **Dr. P.S. Gill, former Director of the C.S.I.O., Chandigarh and an eminent physicist has become the first Indian to be elected a member, to be designated as Fellow, of the Prestigious Explorers' Club of New York.**
4. **Mr. Jagannath Kaushal and Mrs. Gurbinder Kaur, both MPs, have been nominated members of the Institute Body of the Postgraduate Institute of Medical Education and Research, Chandigarh. They replace Dr. Sushila Nayar and Mr. Bhagat Ram.**
5. **Mr. Liu Xi Geng, Vice-Minister for Agriculture of China visited the Punjab Agricultural University, Ludhiana recently. He said that the exchange of scientists and cooperation in the field of food production between China and India might materialise soon. He expressed the hope that friendship between his country and India would grow further.**

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Operational Research

1. Goel, Vijay Prakash. Studies in general inventory models. University of Delhi.

Mathematics

1. Ajay Kumar. Spectral synthesis in hypergroups. University of Delhi.

2. Bagchi, Kalyan Kumar. On some dynamical problems in continuum mechanics. University of Calcutta.

3. Bhatia, Rita. Representation theory of special linear algebra SI (2,c) and generating functions involving Appell's functions. I.I.T., Delhi.

4. Bose, S.C. Some fixed point theorems of nonlinear mappings in branch spaces. I.I.T., Delhi.

5. Chourasia, Nilima Nirmalchandra. On essential spectra, Weyl's theorem and quasi-similarity of Branch space operators. Sardar Patel University.

6. Joshi, P.S. A study of the causality principle in general relativity. Bhavnagar University.

7. Kabadi, Suputra Appasab. Some problems in non-Newtonian flows with or without heat transfer. Karnatak University.

8. Manohar Lal. A new metric in the study of error—correcting codes. University of Delhi.

9. Moral Nalini Kumar. Incompressible second and third order fluids. Dibrugarh University.

10. Mukhopadhyay, Alpana. On some structures of integral transform theories. University of Calcutta.

11. Randhir Singh. Study of incomplete information in sample surveys. University of Delhi.

12. Vasudeva Rao, Yerikalapudy. On some problems in wave motion in elastic solids. Andhra University.

Physics

1. Abha. Infrared absorption study of transition metal cyanides doped in alkali halide crystals. University of Delhi.

2. Ashok Kumar. Perturbed angular correlation studies in the decay of 207Bi, 127m+g Te and 129m+g Te. University of Delhi.

3. Bagchi, Bijan Kumar. Hadron interactions and their symmetries. University of Calcutta.

4. Baghel, Ramnarayan. Study of lattice dynamics of hexagonal close-packed metals based on electron fluid model. I.I.T., Delhi.

5. Bhanwar Singh. Photo-induced chemical and electrochemical changes in amorphous Se-Ge films. I.I.T., Delhi.

6. Bhatnagar, Pramod Kumar. Study of photovoltaic effect in metal-oxide-semiconductor solar cells. University of Delhi.

7. Borikar, Shankar Mahadeorao. Some aspects of relativistic thermodynamics. Nagpur University.

8. Chakrabarty, Subrata. Quark-pair-creation model for strong and radiative couplings of qq and cc measons. University of Delhi.

9. Chakravarty, Bidhan Chandra. Diffusion of Ga in Si through SiO_2. University of Delhi.

10. De, Dilip Kumar. Studies on paramagnetic properties of Crystalline solids of 3rd transition metal group by EPR and allied techniques. University of Calcutta.

11. Ghosh, Jayati. A study of nucleus-nucleus interactions in the Glauber theory of multiple scattering. University of Delhi.

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16. Usha Devi. Multiphoton processes in diatomic molecules in an intense laser beam. University of Delhi.

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7. Mrutyunjayrao, Ivaturi. Physico-chemical investigations of lanthanide (2-pyridylazo)-2-naphthol (PAN) complexes. Andhra University.

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3. Lecturer in English

4. Lecturer in Commerce

Qualifications: At least II Class Master's Degree in relevant subjects with some teaching experience.

Salary scale: Rs. 600-30-750-40-950+ admissible allawances (Total initial emoluments about Rs. 1100/- per month)

5. Instructor in Weaving, Dyeing & Printing

Qualifications: At least II Class Graduate with Diploma in Textile Designing from a recognised institute.

Salary scale: Rs. 500-20-700-25-900+ admissible allowances (Total initial emoluments about Rs 800/- per month).

6. Instructor in Shorthand & Typing

Qualifications: At least II Class Graduate with G.C.C. Certificate in Shorthand & Typing with two year's experience.

Salary scale: Rs. 500-20-700-25-900 + admissible allowances (Total initial emoluments about Rs 800/- per month).

7. Catalogue Assistant

Qualifications: II Class Graduate (preferably in Science) and Diploma or Degree in Library Science with some experience.

Salary Scale: Rs. 290-10-390-15-465-EB-15-540+admissible allowances. (Total initial emoluments about Rs. 500 per month)

Note: (a) Only suitable candidates will be called for interview (b) Other thing being equal preference will be given to candidates from Scheduled Castes/Scheduled Tribes/ Other Backward Communities (c) Higher starting salary may be considered in exceptional cases (d) Job specifications for posts under (1) be collected with application forms.

(Smt.) Kamalini H. Bhansali
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

Notification No. 11

Applications are invited for the following posts in prescribed forms which will be available upto **1st May, 1980** alongwith the details of qualifications and Specialization from the undersigned on pre-payment of Rs 2-00 (Re. 00-50 np. for members of Scheduled Castes/Scheduled Tribes) by Crossed Indian Postal Order payable to Registrar, M.S. University of Baroda alongwith a self-addressed envelope of 30 cms x 12 cms for each post.

The applicant at the time of requesting for the prescribed forms should mention very specifically the **post Number** for which the forms are required. The Scheduled Castes/Scheduled Tribes candidate will attach a certificate to this effect.

FACULTY OF ARTS: **Lecturer in**:

(1) Archaeology and Ancient History (3 posts) (2) English (3 posts) (3) History (2 posts) (4) Linguistic (5) Library Science (6) Pali (7) Persian (2 posts) (8) Sociology (8a) Arabic.

FACULTY OF COMMERCE: **Lecturer in**:

(9) Accounts (10) Banking (11) Business Administration (12) Business Economics (3 posts) (13) Commerce (2 posts) (14) Co-operation (15) English (2 posts) (16) Statistics.

FACULTY OF EDUCATION AND PSYCHOLOGY: **Lecturer in**:

(17) Education (3 posts) (18) Educational Administration.

FACULTY OF FINE ARTS: **Lecturer in**:

(19) Art History (20) Museology.

COLLEGE OF INDIAN MUSIC, DANCE AND DRAMATICS: **Lecturer in**: (21) Tabla (22) Violin.

FACULTY OF HOME SCIENCE: **Lecturer in**:

(23) Clothing and Textiles (2 posts) (24) Child Development (4 posts) (25) Home Science Education and Extension (2 posts).

FACULTY OF SCIENCE: **Lecturer in**:

(26) Bio-chemistry (2 posts) (27) Lecturer in Nutrition (28) Botany (3 posts) (29) Chemistry (5 posts) (30) Microbiology (31) Statistics (2 posts) (31a) Mathematics.

BARODA SANSKRIT MAHAVIDYALAYA:

(32) Pradhyapakas (in Different Shastras) (6 posts) (33) Pradhyapaka in English.

FACULTY OF SOCIAL WORK:

(34) Lecturer in Social Work (35) Agency Supervisor.

M.K. AMIN ARTS AND SCIENCE COLLEGE AND COLLEGE OF COMMERCE, PADRA **Lecturer in**:

(36) Economics (37) Hindi (37a) Business Economics

LECTURER PRADHYAPAKA
AGENCY SUPERVISOR
SCALE:
Rs. 700-40-1100-50-1300-Assessment-50-1600.

The post carry usual allowances in accordance with the rules of the university.

Reservations of the posts is as under:

Number of posts reserved are mentioned in the Bracket.

1. **SCHEDULED CASTES**:
   S. No. 2(1), 4(1), 9(1), 12(1), 17(1), 21(1), 24(1), 28(1), 29(1), 31a(1), 32(1), 34(1), 36(1).
2. **SCHEDULED TRIBE**:
   S. No. 1(1), 2(1), 3(1), 8(1), 11(1), 12(1), 15(1), 16(1), 17(1), 22(1), 23(1), 24(1), 25(1), 26(1), 28(1), 29(3), 30(1), 32(1), 35(1), 37(1).
3. **SOCIALLY AND EDUCATIONALLY BACKWARD COMMUNITIES including NOMEDIC AND DENOTIFIED TRIBES**:
   S. No. 2(1), 3(1), 12(1), 17(1), 24(1), 25(1), 28(1), 29(1), 31(1), 32(1), 37a(1).

If no suitable candidates are available from SC/ST/SEBC Categories, the posts will be filled up by other candidates who are found suitable.

The application form, duly completed, be sent to the Registrar, M.S. University of Baroda, Baroda-2 along with the Crossed Indian Postal Order for Rs. 8-00 (Rs. 2-00 for SC/ST candidate) payable to the Registrar, M.S. University of Baroda, Baroda on or before **10th May, 1980**.

The candidates if called for interview will have to come at their own expenses.

K.A. Amin
REGISTRAR

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P.O. MOHANPUR, WEST BENGAL

Advertisement No. Apptt./3/80

Applications are invited in prescribed forms for the following posts in the scales mentioned below plus other allowances as admissible under the rules of the Viswa Vidyalaya:—

KALYANI CAMPUS

A. Reader in Agronomy (Two posts)
B. Lecturer in Agril. Engineering/Genetics & Plants Breeding (one post each)

NORTH BENGAL CAMPUS

C. Reader in Plant Pathology/Ag. Entomology/Ag. Engineering (one post each)
D. Lecturer in Agronomy/Genetics & Plant Breeding/Agril. Engineering one post each).

RESEARCH POSTS FOR REGIONAL RESEARCH STATION AT COOCH BEHAR

E. Officer in-charge/Associate Director of Research.
F. Associate Research Scientists (Agronomy, Horticulture, Soil, Plant Breeding, Plant Pathology, Agril. Entomology, Soil Conservation)
G. Assistant Research Scientists (Agronomy, Horticulture, Soil,

(*Contd. on page 220*)

Indian school of Mines

Dhanbad-826004

No. 615135 Dated : March 21, 1980

Admission to Postgraduate Engineering Programmes 1980-81

1. Applications are invited from candidates possessing requisite qualifications as indicated below for admission to the following postgraduate ENGINEERING programmes being offered at the Indian School of Mines, which is deemed to be University under the UGC Act :

No	Programme	Department	Eligibility Oualifications.
E-I	CISM/DISM/M Tech in Industrial Engg and Management (Oriented towards mineral industries-see Note A).	Industrial Engineering and Management	Degree (or equiv) in Engg with at least six months industrial training
E-II	One-year DISM in Drilling Engg. (see Note B)	Engineering and Mining Machinery	Degree (or equiv) in Mech/Min/Aut/Prod Engg or Min Machinery.
E-III	One-year DISM Mining Machinery	Engineering and Mining Machinery	Degree (or equiv) in Min Mach/Mech/Elec/Electronics/Min Engg.
E-IV	One-year DISM in Mineral Engg	Chemistry, Fuel and Metallurgy	Degree (or equiv) in Chem/Min/Mech/Met/Elec Engg or MSc in Ore Dressing/Appl Geology
E-V	One-year DISM in Fuel Engg	Chemistry, Fuel and Metallurgy	A degree in Fuel/Chem/Min/Met/Mech/Elec Engg. or Equivalent.
E-VI	One-year DISM in Min Engg. (Specialisations offered: Mine Planning & Design, Rock Mechanics, Environment).	Mining Engineering	Degree (or equiv) in Min Engg
E-VI (PT)	Two-year part-time DISM Programme in Mining Engg (Evening classes)	Mining Engineering	Degree (or equiv) in Min Engg

E-VII Two-year M Tech (Opencast Mining)	Mining Engineering	Degree (or equiv.) in Min Engg or Civil/Elec/Mech/Engg or MSc in App Geology (with one year experience in Opencast Mines in case of non-mining candidates
E-IV-M One-year M Tech (Minl Engg)	Chem, Fuel & Met	DISM in Mineral Engg.
E-V M One-year M Tech (Fuel Engg)	-do-	DISM in Fuel Engg
E-III-M One-year M Tech (Min Machinery)	Engg & Min Mach	DISM in Min Machinery
E-VI-M One-year M Tech (Mining Engg)	Min Engg	DISM in Min Engg

Note (A): Programme E-I/Consists of three terms of course work, each of 12-week duration. A student successfully completing one term is awarded the postgraduate Certificate of CISM. A student completing two terms, with additional guided project work of 4-month duration, is awarded the postgraduate Diploma of DISM, while a student completing all the three terms with guided research work for one year is awarded the M Tech degree in Industrial Engg and Management.

Note (B): Programme E-II also consists of three terms (each of 12-week duration), first two of course work and the third one for industrial training.

Note (C): For programmes E-III-M to E-VI-M, there is only guided project work. For candidates working as external candidates, the project shall normally be of two-year duration.

2.1 In each case a candidate should have obtained at least 60% marks in the qualifying examination—relaxable to 55% for SC/ST candidates, for sponsored candidates and for those with field/research experience or special aptitude for research.

2.2 Candidates shall have to appear at a written test (of about two-hour duration) and **viva-voce** at the SCHOOL on the dates intimated. No T.A. shall be paid for attending these tests.

2.3 Only 6-12 Candidates, may be admitted in each course depending on circumstances. 20% of the seats are reserved for SC/ST candidates, if available, Otherwise they will be thrown open.

3.1 Preference is given to **sponsored candidates.** (Sponsorship in this context means retention of lien on post and grant of suitable allowance). Application of sponsored candidates should carry suitable endorsement to this effect by the employer.

3.2 **Scholarships**: Unsponsored students are eligible for a scholarship of Rs 400 p.m. for a period not exceeding 12 months (upto 24 months for programmes E-I and E-VII) provided that they have obtained at least 60% or 55% marks, as the case may be, in the qualifying examination.

Students of Programmes E-VI (PT) are NOT eligible for any scholarship, as also external students of Programmes E-III-M to E-VI-M.

4.1 **Procedure for applying**: Application forms along with programme-particulars can be obtained by sending a Bank Draft or crossed Postal Order (where banking facilities are not available) for a sum of Rupees Five only, made payable to the Registrar, Indian School of Mines, Dhanbad-826004, along with a self-addressed unstamped envelope of size 23 cm × 10 cm.

4.2 **Last Date for Receipt of Completed Application is May 20, '80.**

S.P. VARMA
REGISTRAR

(*Contd. from page 219*)

Plant Breeding, Plant Pathology, Agril. Entomology, Agril, Economics)

H. Assistant Statistician (one post)

POSTS UNDER SCHEME

I. Research Scientist (one post under temporary scheme)

J. Field Officer (one post under Comprehensive Scheme: Cost of Cultivation).

Scale of pay for the post/posts at E:
1500-60-1800-100-2000-125/2-2500/-
A, C & F: Rs. 1200-50-1300-60-1900/-
B, D, G, H & I: Rs. 700-40-1100-50-1600/-
J: Rs. 400-40-800-50-950/- (unrevised-likely to be revised)

Qualification for the posts at 'A' & 'C':

(i) A first class or high second class Master's Degree in the subject or an equivalent qualification of a foreign University (ii) A Doctoral Degree in the relevant subject or published work with a good record of research (iii) Five years' experience of teaching and/or research, of which three years must be as Lecturer or in a post of equivalent rank.

Qualification for the posts at 'B' & 'D':

(i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent degree of a foreign University (ii) A Doctoral degree in the subject concerned or published research work of an equally high standard.

*For the post of Lecturer in Agril. Engineering, Kalyani Campus, Specialisation in Farm Machinery & Power in M. Tech. in Agricultural Engineering is required.

**Those who have applied for the post of Lecturer in Agril. Engineering, North Bengal Campus as per our advertisement No. APTT/3/79 need not apply, their cases will be considered.

Qualification for the post at 'E':

(i) A first or high second class Master's Degree in any branch of Agricultural Sciences (ii) A Doctorate Degree or equivalent published work with distinguished record of research of high standard (iii) Ten year's experience of teaching and/or research (iv) Experience of successfully guiding research at the Doctoral level.

OR

An eminent scholar with published work of high quality actively engaged in research (ii) Ten years' experience of teaching and/or research (iii) Experience of successfully guiding research at the Doctoral level.

Qualification for the post at 'F': A first or high second class 'Master's Degree in the subject or equivalent degree of a foreign University (ii) A Doctoral with Degree in the subject or published work a good record of research (iii) Five years' experience of teaching and/or research.

Qualification for the post at 'G':

(i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent degree of a foreign University (ii) A Doctoral Degree in the relevant subject or published work of an equally high standard.

Qualification for the post at 'H':

(i) A consistently good academic record with first or high second class Master's Degree in Statistics with knowledge of programming (ii) A Doctoral degree in the relevant subject or published work of an equally high standard.

Desiable:

Teaching/Research/Extension work experience.

Qualification for the post at 'I':

(i) A consistently good academic record with first or high second class Master's Degree in Agril. Chem & Soil Science/Agril. Chemistry/ Soil Science with major field of specialisation in Soil Science or equivalent degree of a foreign University (ii) A Doctorate Degree in the concerned subject or published research work of an equally high standard.

Desirable:

Experience of research in the field of Chemistry of submerged soils.

N.B.:

(i) For the posts of Reader/Lecturer/ Asst. R.S./Assoc. Research Scientist in Agronomy & Horticulture, Master's Degree should be followed by B.Sc (Ag.) Degree.

(ii) For the posts under B, D, G, H & I, preference will be given to the candidates having basic degree in Agriculture i.e. B.Sc. (Ag.)

Qualification for the post at 'J':

A good Master's Degree in Agril. Economics following a degree in Agriculture

OR

A good Master's Degree in Agricultural Economics with a good honours degree in Economics.

Desirable:

Two years experience of research and/or service in connection with Comprehensive data collection work in the villages.

AGE:

For post at 'E':—Below 55 years.

'A', 'C' & 'F':—Below 50 years.

'B', 'D', 'G', 'H', 'I' & 'J': Below 45 years.

Experience and age limit may be relaxable on the recommendations of the Selection Committee in the case of candidates otherwise qualified. A high initial pay in the scale may be granted on the basis of qualifications, experiences and present emoluments.

Applications must be submitted in the prescribed forms obtainable from the Office of the Registrar, Bidhan Chandra Krishi Viswa Vidyalaya, P.O. Mohanpur, Dist. Nadia, West Bengal by remitting crossed Indian Postal Order for Rs 8.00 (eight) in favour of the Bidhan Chandra Krishi Viswa Vidyalaya between 11-30 A.M. & 4-00 P.M. on week days and between 11-30 A.M. & 1-00 P.M. on Saturdays.

Application forms may also be obtained by post by sending a self-addressed envelope stamped Re. 0.45 (forty five paise) only and the necessary

Postal Order.

Persons already in employment should apply through proper channel.

Applications completed in all respects should be submitted to the Office of the undersigned by the **26th April, 1980** in an envelope superscribed with the name of the post applied for.

Candidates called for interview will have to appear at their own cost.

A.K. Mitra

REGISTRAR (Actg.)

Awadhesh Pratap Singh Vishwavidyalaya Rewa (M.P.)

Quotation Tender Notice

The library building of Awadhesh Pratap Singh University Rewa. M.P. has to be furnished with steei and wooden furniture the details of the rooms are given as follows. The interested person and supplier may visit the site and suggest the required furniture and quote their rates latest by **29th April 1980**. The details can be had from the University Engineer.

(1)	General reading hall	34.60 x 11.62 meter
(2)	Stack room	29.35 x 14.40 meter
(3)	Cubicals	2.20 x 2.90 meter
(4)	Text book room with stack provision	9.73 x 14.45 meter
(5)	Under graduate reading room	9.78 x 14.45 meter
(6)	Exhibition hall	14.68 x 17.58 meter

REGISTRAR

Engg/80/747/760 Date 9-4-80

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3 years	44.00	220.00	360.00
5 years	72.00	350.00	550.00
Single copy	00.80 ps.	4.00	8.00

The Journal is mailed on 1st and 15th of every month.

TECHNICAL TEACHERS TRAINING INSTITUTE

(Southern Region) ADYAR MADRAS-600020

Advt. No. 1/80

Applications are invited in the prescribed form for the following posts:

POSTS & SCALES OF PAY	QUALIFICATIONS	EXPERIENCE
1. Professor of Educational Management & Administration (1 No.) Rs. 1500-60-1800-100-2000-125/2-2500. Age: 35 to 48 years.	First class Master's Degree/Ph.D. in Business Administration/Indl. Engg./Behavioural Science/related discipline.	Minimum of 7 to 10 years of distinguished experience in teaching/Research in an institution of Univ. standard at Post Graduate level or in a teachers' training institute; OR 15 years of teaching experience in a polytechnic or Engg college out of which at least 6 years must have been at the level of a Principal or Head of Department in a poly. or other equivalent cadres.
2. Asst Professor of Extension Centre (1 No. & one more likely to arise) Rs. 1200-50-1300-60-1900. Age: 30 to 45 years.	First Class Master's Degree/Doctorate in Engineering discipline.	Minimum of 5 yrs. experience in teaching/research in an institution of University standard or in a teachers' trg. institute OR 10 yrs. teaching experience in a polytechnic or Engg College out of which atleast 3 yrs. should have been at the level of Lecturer in a polytechnic or other equivalent cadres.
3. Asst Professor of Maths. (1 No.) Rs. 1200-50-1300-60-1900. Age: 30 to 45 years.	First class Master's Degree/Doctorate degree in Mathematics.	-Do-
4. Asst Professor of Educational Communication. (1 No.) Rs. 1200-50-1300-60-1900. Age: 30 to 45 years.	First class Master's Degree/Ph.D. in English.	-Do-
5. Lecturer in Mech Engineering. (1 No. and one more likely to arise) Rs. 700-40-1100-50-1600. Age: 25 to 35 years.	First class Master's Degree in Mech Engg.	2 yrs teaching/indl. research experience in an institution of Univ. standard (OR) 3 yrs teaching experience in a polytechnic or Engg College.
6. Lecturer in Electronics Engineering. (1 No.) Rs. 700-40-1100-50-1600. Age: 25 to 35 years.	First class Master's degree in Electronics engineering.	-Do-
7. Editor (1 No.) Rs. 700-40-900- EB- 40- 1100-50-1300. Age: 25 to 35 years.	Degree with a Diploma in journalism.	About 5 years experience in editing research reports/instructional material/annual reports/journals and other institute publications.

NOTE: Posts at Sl. Nos. 1 and 4 are being advertised for the second and third time respectively. For these posts, educational qualifications in lieu of longer period of experience and experience requirements in lieu of better educational qualifications are relaxable.

All posts carry usual allowances as applicable at present to the employees of the Central Government. Preference will be given to SC/ST candidates if they are otherwise qualified for all the posts. Age is relaxable in suitable cases. Those who are already in service may also be considered on 'Foreign service terms'.

The Institute reserves to itself the right to alter the number of posts, to fill or not to fill any or all the above posts, and to call or not to call the candidates for interview.

Application form together with 'instructions to candidates' and detailed qualifications, experience, job description etc. can be obtained from the Principal of the Institute on requisition with a self-addressed envelope (23 x 10 cm) duly affixing postage stamps to the value of 90 paise.

Applications duly completed in all respects should reach the principal on or before **15-5-1980**.

3rd April 1980.

PRINCIPAL

SAURASHTRA UNIVERSITY

Applications in the prescribed forms are invited for the under-mentioned posts. Application forms alongwith detailed requirements of qualifications and experience for these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360005 on sending a self-addressed envelope of the size 23x11 cms. with postage stamps worth Rs 1-20.

Applications (Seven copies) accompanied by Indian Postal Order for Rs. 10/- crossed in favour of the Registrar, Saurashtra University, Rajkot should reach this office on or before 12-5-1980.

1. **DEPARTMENT OF GUJARATI**
   Readers—2
   Preferably in Literary Criticism/Linguistics.
2. **DEPARTMENT OF ECONOMICS**
   (a) Professor—1
   Specialization in Managerial Economics/Quantitative Economics/Mathematical Economics/Industrial Economics and/or allied subjects.
   (b) Reader—1
   Specialization in Rural Studies/Quantitative Economics /Managerial Economics and/or allied subjects.
3. **DEPARTMENT OF SOCIOLOGY**
   (a) Professor—1
   The incumbent is required to develop Rural Sociology in Saurashtra.
   (b) Lecturer—1
   Expected to work for developing Rural Sociology and Regional Studies.
4. **DEPARTMENT OF HISTORY**
   (a) Reader—1
   (b) Lecturer—1
5. **DEPARTMENT OF COMMERCE**
   Reader—1
   Specialization in Quantitative Techniques or Applied Economics (Banking & Finance, Business Economics etc.)
6. **DEPARTMENT OF BIO-SCIENCES**
   Lecturer—1

   Specialization in Ecology, Evolutionary Genetics, Biochemistry, Biophysics, Radiation Biology, Field research experience with reference to Dessertification will be an added qualification.
7. **PROFESSOR-IN-CHARGE (English Language Cell)**
   Must possess qualification for being recognised as a P.G. Teacher. Expected to be incharge of English Language cell for improving the competence of teachers, students in the use of English as a Library Language.

PAY SCALES:

1. PROFESSOR: Rs. 1500-60-1800-100-2000-125/2-2500.
2. READER : Rs. 1200-50-1300-60-1600-assessment-60-1900.
3. LECTURER : Rs. 700-40-100-50-1300-assessment-50-1600.
4. PROFESSOR-IN-CHARGE: Rs. 1000/- fixed P.M.
   (English Language Cell)

The post Nos. 1 to 6 are permanent and the appointment shall be given on probation initially for one year which may be extended for a period not exceeding one year.

The post No. 7 is purely temporary and will continue upto 31-3-1981.

For the post Nos. 1 to 6 the initial appointment shall be with the minimum of the pay scale but in suitable cases higher initial pay may be considered. The allowances like D.A., A.D.A., H.R.A. etc. and Provident Fund and retirement benefits will be admissible as per the University Rules from time to time.

One post is reserved for Scheduled Castes, Scheduled Tribes, Nomadic Tribes/Denotified Tribes and Social and Educational Backward Class candidates subject to the availability of suitable candidates.

Age ordinarily not exceeding 55 years. The age, educational qualifications and the experience may be relaxed in suitable cases.

The employment shall be subject to the conditions of service rules for the University employees as may be amended from time to time.

The candidates already in employment must submit their applications through their present employers. Those knowing Gujarati and/or Hindi will be preferred.

The candidates will have to travel at their own cost if called for interview

B.F. Shah
I/c REGISTRAR

Indian school of Mines

DHANBAD-826004

No: 615126/79 **Dated: 14.3.1980**

Admission to Advanced Diploma in Mine Surveying 1980-81

Applications are invited from candidates possessing the requisite qualifications for admission to ONE-YEAR Advanced Diploma course in Mine Surveying being offered by the Indian School of Mines, which is a deemed to be a University under the University Grants Commission Act:

2. Eligibility Requirements:

(A) (i) Diploma in Mining/Surveying/Civil Engg (or equivalent) with one-year experience in underground coal/metal mine surveying.

(ii) The candidate should have obtained at least 60% marks in the qualifying examination, relaxable to 50% for sponsored candidates.

OR

(B) In case of sponsored candidates only, Higher Secondary (with Physics, Chemistry and Mathematics), with Mine Surveyors Certificate of Competency (granted under the Mines Act) and one year experience as Surveyor after obtaining the said Certificate (Persons who have completed the relevant Make-up semester at Indian School of Mines would also be eligible for admission).

3. Preference will be given to sponsored candidates and, amongst them, to persons holding a diploma as at 2(A) above. Sponsorship in this context means retention of lien on post and grant of suitable allowance. Application of sponsored candidate should carry suitable endorsement by the employer to this effect.

4. Procedure for applying:

Application forms alongwith the relevant information bulletin can be obtained by sending a Bank Draft or Crossed Postal Order, where banking facilities are not available for Rs. 5/- (Rupees Five only) made payable to the Registrar, Indian School of Mines, Dhanbad-826004.

Last Date for Receipt of Completed Applications: May 31, 1980.

S. P. Varma
REGISTRAR

O/ISM/80

SHREEMATI NATHIBAI DAMODAR THACKERSEY WOMENS' UNIVERSITY

BOMBAY-400020

Applications are invited on prescribed forms (8 copies) available from the University Office on payment of Rs. 5/- (by M.O. or in cash) for the following posts to be filled in at the colleges conducted by the University at Bombay and Poona, so as to reach the undersigned before **April 24, 1980**.

	Medium	No. of posts
I. S.N.D.T. Arts & Commerce College for Women, Bombay		
LECTURER IN		
1. Commerce	English	One
2. Economics	(a) Gujarati	One
	(b) English	One
II. S.N.D.T. Arts & Commerce College for Women, Poona		
LECTURER IN		
1. Commerce	Marathi & English	One
2. Economics	Marathi & English)	Three
3. Hindi		One
4. English		One
III. P.V.D.T. College of Education for Women, Bombay		
LECTURER IN		
1. Education	Marathi	One
2. Special Education	English	One
3. Guidance & Counselling	Marathi Or Gujarati	One
IV. S.N.D.T. College of Education for Women, Poona		
Lecturer in Education	Marathi	One

Qualifications: (a) Consistently good academic record with at least first or high second class at Master's and Bachelor's level in the subject concerned or an equivalent degree of a foreign University; and

(b) An M. Phil. Degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

Note:

(1) Provided that if the Selection Committee is of the view that the research work of a candidate is evident either from his/her thesis or from his/her published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

(2) Provided further that if a candidate possessing the qualifications at (b) above is not available or not considered suitable the college on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that he/she will have to obtain a M. Phil Degree or a recognised degree beyond the Master's level within five years of his/her appointment, failing which he/she will not be able to earn future increment until he/she obtains that degree or gives evidence of equivalent published work of high standard.

Salary Scale:

Rs. 700-40-1100-50-1300-Assessment-50-1600+admissible allowances per month (Total initial emoluments about Rs. 1175/- per month).

Additional requirements for Lecturers in Education Colleges under III and IV

(a) **P.V.D.T. College of Education for Women, Bombay**

1. **Lecturer in Education**:

Post-Graduate Degree in: Mathematics and Statistics/ Statistics as a special paper/Group at Master's level;

or

B.Ed. with: (i) Mathematics and Science/Geography (ii) Science and Mathematics or Geography.

Experience in Micro-teaching and Adult Education.

2. **Lecturer in Special Education** :

Specialisation in Special Education or Education and Psychology or Education and Child Development are essential.

3. **Lecturers in Guidance & Counselling**:

Diploma in Vocational Guidance of Government of Maharashtra or its equivalent, and actual experience of guidance and counselling work are essential.

(b) **S.N.D.T. College of Education for Women, Poona**

Lecturer in Education:

Specialisation in Home Science or Gujarati or Commerce with Methodology of Teaching of the subject/subjects. Training in Micro-teaching/working with community work experience.

Note:

(a) Only suitable candidates will be called for interview

(b) Other things being equal, preference will be given to candidates from Scheduled Castes/Scheduled Tribes/Other Backward Communities

(c) Higher starting salary may be considered in exceptional cases

(d) Job specification for posts under III and IV be collected with application forms,

(Smt.) Kamalini H. Bhansali
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

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K.A. Amin
REGISTRAR

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University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH MAY 1, 1980

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Professor M.G.K. Menon, Secretary, Department of Science & Technology, Government of India, delivering the Convocation Address at the Bombay University.

SAMBALPUR UNIVERSITY

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REGISTRAR

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Dated 14-4-1980 **REGISTRAR**

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Editor : ANJNI KUMAR

Significance of Non-formal Education

S. C. Dube*

In the later half of the sixties and in the seventies there has been serious soul-searching among educationists and socially concerned thinkers on the goals and instrumentalities of education. Perhaps at no other time in human history did education figure as a key concern of public policy; never was it debated with such intensity. The accepted objectives of education have been challenged, the inadequacies of the educational establishment have been exposed, and its functional and dysfunctional social consequences have been minutely examined. Pedagogy today is in a state of ferment. Several strands are visible in the global debate centring on education. Some view it essentially as an instrument of pattern maintenance—of continuance of the status quo. On the other extreme, there are radical thinkers who visualize education as a powerful tool in the war against varied forms of tyranny and oppression to which a large section of mankind is subjected in the present order of things. A middle position is taken by those who are convinced that the present order is untenable, but who fell, at the same time that a revolution is not necessarily the only or even the most desirable alternative. Those belonging to this school of persuation would assign to education an essentially reformative role. A powerful segment of thinkers links education with the future of mankind and assign to it a place of significance in their strategy for the realization of a viable utopia. To it survival depends on education and the patterns of education have to be geared to the objective of human survival. The debate continues. No final answers have been found.

Nonetheless some weaknesses of the formal system of education have emerged in clear relief. Its structure and operational designs seek to perpetuate the status quo and have been found wanting in coping with the challenges posed by the social and psychological convulsions that have characterized the last few decades. It cannot be denied that this system, except in the socialist countries, is weighted in favour of the privileged minority. The boastful figures about the spread of education, often refer only to quantity without taking into account the all too important consideration of quality. In the less developed countries the under-privileged receive what can be described, at best, as a notional education. The monolithic structure of education has only one entry point, if you are cast off once you rarely get a second chance. It is undeniable that it produces more dropouts than those who actually receive some educational qualification. The formal

(Continued on page 242)

** Vice-Chancellor, University of Jammu.*

University Research and National Development in India

R. C. Paul*

Introduction : A sustained and continuously growing research effort is the inevitable corollary of the world of sweeping changes and on-rushing obsolescence that Science and Technology have introduced. In a world where science and activities related to it are doubling in ten to fifteen years, where, it is said, a scientific paper is out of date before it is printed, a book is out-dated by the time a student completes his course, where a graduate is absolescent on the day of his graduation, where technology applying it follows on the heels of the basic discovery much sooner than it even did before, no nation can remain, in the close-knit world of today, unaffected by and indifferent to these vast changes. For there are only two options : to meet the challenge and rise on the crest of the wave or be swept over by it. There is no third option. Like inexorable fate change moves on, with an ever-increasing acceleration, and there is really no choice for a nation except to strain every nerve to meet its challenge. Again, research itself increase the need for more research. Not only does it open up new vistas which need to be explored, but technology also disturbs the delicate and complex balance of nature with the result that one problem solved throws up a hundred more problems to be solved.

The challenge of change, again, is comprehensive. For while the driving force of this change is Science and Technology, their impact is total, both on the natural and social environment. As the Education Commission of 1964-66 pointed out, while their impact on the material environment is great, there impact on culture is even more profound. And it goes on to say : "Nothing comparable to the scientific revolution in its impact on man's development and outlook has happened since the neolithtc times." One could add that the comprehensive nature of the impact of science and technology has been generally ignored leading to distortions and mal-adjustments which have endangered the very survival of the human race itself. It is this realisation that has led to the emergence of the science of Technical Assessment (TA) which tries to judge the total social and environmental impact of a technology before its final adoption.

This comprehensive challenge can be met only by a comprehensive research effort by our top intellectuals in Science and Technology, Social Sciences and the Humanities so that material growth takes place within the framework of our overall societal goals and distortions are avoided. The universities, representing as they do the apex of our educational system and all the disciplines, are most favourably placed for this comprehensive and inter-disciplinary research effort. The universities, however, are a part—though a most essential and significant part—of a much vaster infra-structure, which has been created in many countries for purposes of a quicker response to immediate and specific problems—much quicker than universities by themselves can give, because of their structure, primary concern with fundamentals etc. Therefore, research in universities can best be studied when they are viewed as an integral part of the total R & D infra-structure in the country, with the other parts of which they have to vigorously interact.

R & D is the name of organised and systematic effort for increasing productivity and introducing technical innovations. The R & D chain is a long but integrated one and consists of basic oriented research, applied research and design and development. The first aims at increasing scientific knowledge in known fields or discovering new fields of investigation which seem to have significance and potential for application in R & D. In applied research the objective is to discover knowledge which would have specific, practical application in R & D. Design and development is the application of the results of basic and applied research and of empirical knowledge to introduce new materials, products devices, processes and methods for improving existing ones including the development of prototypes and pilot plants. This is technical R & D and has to be combined with business R & D to produce results. The latter consists of transferring the technology developed to the economy and marketing the innovation. Coupling the technical R & D with the business R & D and getting the feed-back from the latter really completes the R & D chain. While these distinctions broadly differentiate the different stages in the R & D chain, they are by no means as sharp as they were a few decades ago. As the Education Commission points out, in some fields hardly any distinction exists between basic and applied research and between research and development. "In fact", continues the Commission, "the great strength of contemporary science lies in the close interaction and mingling of applied and basic sciences.

R & D Imperatives of Development Goals : R & D is the most effective tool for development. As Stevan Dedijer has shown, there is a close relationship between GNP and the expenditure on R & D. To be effective, R & D has to be closely linked, both in its areas of choice and its strategies, with the socio-economic development goals of a nation. The Indian goals are embodied in the Indian Constitution and spelt out in her development plans. They may be summed up as Democratic Socialism. It implies increased production, equitable distribution

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**Vice-Chancellor, Punjab University, Chandigarh.*

and involvement, as full as possible, of the people. In the context of India's poverty and unemployment, it becomes essential to meet the minimum needs of the people and provide employment, which can only be done in the context of development of the rural areas, where 70 per cent of the people live. There is then the challenge of excellence in this highly competitive world and the problem of security where no amount of import technology can be of adequate help. The problems needing utmost attention, therefore, may be summed up as welfare, growth and security.

In response to these challenges the "twin objectives of the S & T Policy", says the Draft Five Year Plan 1978-83," will be: (a) to secure for the people of the country, particularly those in the rural areas, all the benefits that can accrue from the acquisition and application of scientific knowledge and research, to remove unemployment and fulfil their basic needs, to enhance the quality of their life, and to enable them to realise their full human potential and (b) to improve the quality and expand the quantity of the S & T effort, and harness the S & T capability for enhancing self-reliance.

In regard to the basic minimum needs, while it is largely, with certain adaptations, the use of existing knowledge, calling more for socio-political and administrative decisions and organisation than for R & D, that will be required, "new knowledge is certainly necessary in such areas as new varieties of seeds, nitrogen-fixation through biological or chemical methods, biological control of pests, photosynthesis, new uses for various local plants and other materials, re-cycling of waste products, new sources of energy, especially those suited for decentralized exploitation, new materials, improvement in the productivity of soils, better understanding of parasitic diseases, fertility control etc. In these broad areas specific and tasks of critical importance should be identified so that the results of the R & D effort can be maximised. In a panel discussion of scientists, drawn from front-line fields of science and technology in India, reported in The Hindu of September 27, 1979, some of these areas, which had been neglected, were identified; cashew-yield, sandalwood virus, thatch (which is used by millions of our people as roofing material), coconut fibre etc. A greater understanding was needed to tropical biology and soil biology to get four crops a year instead of double cropping, which we have already achieved. Agriculture was the best converter of solar energy and the problem needed our concentrated attention. Problems of the exploitation of our water resources—both sea and inland, or semi-arid zone and rocky soils also need concentrated R & D effort. Agriculture—along with some other areas like health, coal mining, fertilizers and pestisides, oil exploration and exploitation etc.—constitutes a sector of the economy where the very size of operations calls for substantial R & D inputs, which can also become cost-effective. Then there are high technology areas like atomic energy, space, defence, electronics and telecommunications where self-reliance has become increasingly important. Not only is the latest technology in these fields not always available, pre-occupation with high technology also serves to build up the confidence of our scientists and has other spin-offs. So we have three types of areas where R & D effort needs to be concentrated, the area of minimum needs, the area where the scale of operations is very large and certain high technology areas where either our security is involved or where it is necessary for us to strive to keep in the frontline of research. There are some other areas, especially those in which knowledge and techniques are developing very fast, where we need to build our capability to take wise decisions while importing technology or equipment.

As regards the *strategy* of R & D, dependence on outside technology should be minimal. Firstly, because if we depend upon borrowed technology, we will be perpetually behind others. For the technology that other countries sell is or is about to be obsolete. Secondly, because decentralised development, which we have opted for, and the optimal use of our own resources will require our developing our own technology. Thirdly, this will build up the self-confidence of our scientists and technologists and accelerate their development. Fourthly, it saves us from dependence on other countries for spares. It is estimated that even if a country gives us a plane free, the components which we will have to buy during the life of the plane, will cost us four times the cost of the plane. Fifthly, it saves us from the vagaries of international aid and trade relations. This self-reliance, however, need not rule out the import of technology in those sophisticated and high priority areas where Indian Science and Technology is not yet adequately developed. In such cases the best and most appropriate technology ought to be bought out-right and then adapted and improved upon to suit our own conditions and infra-structure. That pre-supposes that one has built up the necessary capability for choosing the right technology and assimilating it. Japan did it so well that it exported the improved technology. This would also require the association of the indigenous R & D laboratories and design engineering agencies to be associated with the import of technology. Further, firms, says the Draft Five Year Plan 1978-83, which are allowed to import foreign technology will be required to set up the R & D facilities necessary for its adaptation, assimilation and improvement. Any technology to be imported should further be subjected to Technology Assessment or the assessment of its total impact on our social and natural environment. As far as possible, the products and the inputs of the technological process should be part of the degradable biological cycle. In certain areas while one laboratory or industry does not have the total technological capability, but it is scattered over a number of institutions and organisations, then an attempt must be made to weave them into a system to develop the national capability.

Another task of R & D is to ensure that the technology that we develop or the technology that we borrow must be appropriate. That need not mean that it should be simple or sophisticated. It only means that it is within the adoption and appropriation capability of the user. Appropriate, therefore, is a changing and evolving concept. What is appropriate today may not be appropriate tomorrow, what is appropriate for one sort of clientele may not be appropriate for another type of clientele. Technology to be appropriate must not forget its impact on man—if man—power is abundant, it must not displace labour, if decentralisation is essential for human welfare in a particular context it must not destroy decentralisation etc. Einstein admonished the scientists in one of the big laboratories: "Concern for man himself and his fate must always form the chief interest of all technical endeavours. Never forget this among your diagrams and equations." Further, technology to be economical—and what can be more appropriate in a poor country than economy—one must study intensively our own technologies on the one hand and "leap-frog" to future technologies on the other. Our scientists have the tendency to reject out of hand what is indigenous. We must not forget that they have the sanction of the permanence of centuries behind them and there must be something significant underlying them which must be studied and can be appropriated at no cost. But for that one must go to the villages and talk to the villagers who use that technology to gain insights, which cannot be gained through government reports. The OXFAM report on Andhra cyclone declares that the roofing that was used traditionally was very good for standing against cyclones. Dr. Ramaseshan, in the panel discussion already referred to, considered it worth while studying the structure that had developed over the centuries. In another panel discussion, again organised by The Hindu, Dr. Y. Nayudamma gave his experience in the Central Leather Research Institute:

> ".......take a simple thing like doing the unhairing process. The books on the chemical process will say so much time is needed. But Indian tanners probably one thousand years ago discovered a process which will do it in three hours. We studied, we found that it was enzymatic process and a student has got a Ph.D. Similarly they say that for every pound of leather they require a thousand pounds of water. We know that Gujarat and Rajasthan do not have that much of water. One researcher studied how they do it there and produce the leather and he got a Ph.D. too."

"They got international recognition from the top." And Nayudamma's advice is, which needs all our attention: "We should weave modern methods and tools into the traditional tapestry." The wisdom and beauty of the traditional tapestry need not be doubted if we remember that, as Dr. A.R. Vasudeva Murthy said:

> "India was considered to be the industrial workshop of the world till about the 18th century. Indian technology was far ahead of the European technology in the fields of textile, chemistry, medicine, metallurgy and so on. The achievements in the fields of mathematics and astronomy were vey well established. The best steel that was produced was in India till the middle of the nineteenth century when the Bessemer process came into popularity."

As regards "leap-frogging", in view of the emerging science of forecasting which enables one to forecast with a fair amount of certainty the technology which will appear ten to twenty years from now, it is possible to avoid the expense of the infrastructure of the intermediate stage through which the developed world passed. The heavy investment made therein acts as an obstacle to the developed world to move as fast as they could by adopting the latest technology. Leap-frogging, however, requires a very efficient information system: data banks; efficiently organised conferences and workshops; better, fuller and more easily available reports of these conferences etc. The DST has made some beginnings in this direction. The areas for developing futureistic technology will, however, need to be carefully identified because we should have the financial and technical capability for creating the necessary infra-structure. Some areas in which Dr. Iyenger in The Hindu panel discussion on Technology Assessment felt we could leap-frog were: the adoption of satelite television instead of passing through the city television stations stage in the U.S.A. The putting of optical fibres instead of copper conductors in the telephone system as a result of which its efficiency would increase tremendously—"the number of lines—the amount of information we can transmit and the fastness;" etc. In regard to the telephone, the U.S.A. had the technical capability but it did not want to disturb its present, highly efficient telephone net-work.

Another strategy that our R & D effort will need to adopt is greater interaction between science and technology. For it is only new science that can create new technology.

To increase the efficiency of the R & D chain, the in-house R & D in industry needs to be considerably enlarged. That will make the transfer of the R & D work done in the laboratories to the production line much easier. Today not more than 10 to 15 per cent of the laboratory innovations are adopted by industry. Moving young engineers, especially immediately after Ph.D. to other jobs in the industry and encouraging the mobility of scientists between industry and institutions will also improve the technology delivery system. The problem of risk coverage when a new innovation is taken up in preference to proven technology—which is often imported—will have to be sympathetically considered by Government. The existing effort already made in this direction will need to be considerably enlarged. When it is a question of transferring technology to the unorganised sector or the people, the social scientists must be associated, who can look after the social engineering part and see whether the social culture accepts it and has the capacity to absorb it. To create a culture for science and technology, the education system, including adult education, should create a scientific temper, a scientific way of thinking, among the people and develop their problem-solving capabilities.

Top-most priority, however, ought to be given to build up the self-confidence of the R & D men, develop their social conscience and sense of social responsibility. The lack of self-confidence of our young scientists was noted by almost all the senior scientists who participated in the panel discussion on Technology Assessment, already referred to. Dr. Ramaseshan said that while there was no dearth of talent in our young scientists, whenever they took up a problem, though they came near to a solution, they were never able to finish the job for lack of grit, dedication and self-confidence. Dr. Rohatgi said that at the CSIR Regional Laboratory at Trivandrum they ran delphi questionaires in their studies to anticipate technologies. There was not a single instance that the Indian respondents felt that they would have a technology developed in India before the West did so. They look for recognition from Western Scientists, they take up problems that they work on, they publish their articles in Western journals etc. They forget that they had a built-in advantage in looking at their own environment and also had responsibility to their own people. The senior scientists will have to set the fashion and convince the younger scientists that they could rise to their heights and win international recognition by being themselves. Their movement all along the R & D chain and seeing laboratories themselves, as many of them do today, will also increase their self-confidence. Much greater investment in R & D within the public and private sectors is called for to create a climate for successful adventure which creates self-confidence. Another thing that Indian scientists need to learn is team work, which is indispensable for modern technology.

Perhaps the most important factor in drawing the best talent in the country to R & D and getting the best out of them is the salaries and service conditions. At the instance of the Department of Science and Technology (DST), the Institute of Applied Manpower Research studied the development of R & D personnel. For the purpose, they divided the area of R & D into the Institutional Sector, the Industrial Sector and the Universities. Of these most of the hard core of R & D is done in the Institutional Sector—comprising of the National Laboratories of the CSIR, BARC etc.—which also provides the highest salaries and most favourable conditions. "Out of 23,701 S & T personnel covered, only nine persons were placed in salary scales starting about Rs 2,500 and as few as 103 persons are placed in the salary scales starting between Rs. 2,250/- and Rs. 2,500/-. Moreover, all the nine toppers and 98 out of the 103 in the next lower slab were engaged in administrative work. So for persons engaged full-time in R & D work, the apex for all practical purposes lay below Rs. 2,250/-. Moreover, very few out of the lowest and middle levels could expect to reach the apex." "This shows", concludes the report, "that R & D is certainly not one of the most lucrative professions in the country." The poor prospectus for promotion limits the scope of "both intellectual and career development of the young, promising scientists which ultimately reduces their productivity." In this connection it may be mentioned that the alumni of the Indian Institute of Technology which were set up to produce a cadre of high level scientists and technologists for R & D work were not attracted towards it. A recent survey of the Bombay IIT alumni showed that not more than 30% of these were employed in R & D work. If their migration is also taken into account, the percentage would be still smaller.

Available Infra-structure and Position and Role of Universities therein: The well-established scientific and technological superiority of India was steadily eroded by political subjugation and the on-slaught of cheap machine-made goods. The period of modern scientific research began with the setting up of the three universities at Calcutta, Bombay and Madras in 1857 which produced a few top-ranking scientists like Prof. C. V. Raman and Prof. J. C. Bose. Their tradition was carried on by other eminent scientists like Acharya P. C. Ray, Prof. Megh Nad Saha, Prof. S. H. Bose and others. Their pre-occupation, however, was mostly fundamental research.

The foreign rulers naturally did not encourage the development of indigenous technological capability and whatever industrialisation there was depended on borrowed technology till they were forced by World War II and the cutting off of the supplies from Europe, to develope India as a supply base for the War effort in the East. The Board of Scientific and Industrial Research was set up in 1940 and the Council of Scientific and Industrial Research in 1942. "Much useful work was done under the auspices of these two bodies during the war. It was, however, only after Independence that serious efforts were made to develop India's R & D. The role of R & D in national development was recognised by the setting up of the Ministry of Scientific and Industrial Research in 1948. The powerful Nehru Bhatnagar combine began with a bang and set up a chain of National Laboratories to develop the products and industrial processes, fully exploiting India's indigenous resources to produce maximum self-reliance and to put India on the Industrial map of the world. Research in these laboratories and other research Institutions would especially help the small-scale and cottage industries which could not set up their own R & D. Post-graduate education and research expanded very fast. The next major step was the formulation by Parliament of the Scientific Policy Resolution in 1958, which emphasised that the key to national prosperity lay in the effective contribution of three factors: technology, raw materials and capital of which the first was perhaps the most important. The policy resolution gave a further kick to the R & D effort as may be seen from the following table regarding the increase in expenditure and the scientific and technical manpower:

TABLE I

Annual Growth Rate of R & D Expenditure and Scientific and Technical Manpower

Item	Annual Growth Rate of R & D Expenditure and Manpower									
	1958-59		1968-69		1969-70		1970-71		1971-72	
	T	GR	T	GR*	T	GR	T	GR	T	GR
Expenditure (Rs. Crores)	22.93	—	107.56	36.9%	116.62	8.4%	139.64	19.7%	151.64	8.6%
Scientific Technical Manpower	20,724	—	73.634	25.5%	87,613	19.3%	94,686	8.1%	103,767	9.6%

T: Total, GR: Growth Rate

*Annual Average Growth Rate for the period 1958-59 to 1968-69.

Source: Scientific and Technical Manpower for Research and Development (Report 1: Institutional Sector) op cit-, p. 2.

The Draft Five-Year Plan 1978-83 estimated that there were at that time about 900 research institutions, including universities, under the Central and State Governments and the private sector. The expenditure on Science and Technology (S & T) was about Rs. 400 crores, which was about 0.6% of the GNP. The stock of S & T manpower had been growing at the rate of about 9 per cent per year for over 20 years and was estimated to be about 2 million, giving India the third largest complement of qualified S & T manpower in the world, next only to the USSR and the USA. The net effect has been to put India among the industrialised countries of the world.

In spite of all this effort for R & D, Indian industry has still largely continued to depend on imported technology and there has been very little effort and success in weaving together the R & D capabilities of different agencies to create a system of R & D. The first major effort in this regard was the setting up of the Department of Science and Technology (DST) and the National Committee on Science and Technology (NCST) in 1971. The aim was to develop an S & T Plan interwoven with the socio-economic Five Year Plan. The NCST worked largely through panels of scientists and technologists, economists, administrators and other skilled groups drawn from research laboratories, universities design engineering and manufacturing units, natural resources survey agencies etc. The S & T Plan (1974-79) was brought out in 1974 and identified the S & T tasks that needed to be accomplished. The process of enmeshing them with the Plans of the various Ministries, however, began about the middle of the Fifth Plan when the Planning Commission started discussion about the S & T component of each Ministry/Department's plan with the participation of the CSIR, the DST, the DGTD, Department of Electronics etc. As a result of these exercises the awareness of the importance of S & T tasks has sharpened in the Ministries and separate budget heads and allocations provided which makes it possible to monitor and evaluate the S & T Plan. Special Committee on Implementation of Projects (SCIP) have been set up in the different Ministries. The process is being strengthened and streamlined in the Five Year Plan (1978-83) by creating a small but well equipped nodal point in each Ministry—"a small professional information planning and analysis group"—to lend technical support to the SCIP. It will be the task of this group, in cooperation with the NCST and the Planning Commission, to identify the S & T tasks for improvement of products/services in the sector as well as the institutions (National Laboratories, Universities, IITs etc.) where the capability to help the sector exists and assign them well-defined tasks, as well as make the capability of the sector itself at various points known to others within the sector and outside etc.

The infra-structure for S & T (including R & D) that has now been identified in the country and the various parts of which are being woven into a system may be summed up as follows:

(1) The Department of Science and Technology plays an important role in initiating a number of research programmes in the multi-disciplinary and new emerging areas, and coordinates and formulates programmes of regional relevance which are implemented by a number of organisations. Thus primarily it has been promoting and accelerating inter-disciplinary, multi-institutional research and has been the nodal agency for international cooperation in the field of science and technology with several countries. Besides, it is promoting the utilisation of indigenous technology. It has two apex bodies: the National Committee on Science and Technology to formulate, monitor and modify where found necessary, the S & T Plan, in cooperation with the Planning Commission, and the National Committee on Environmental Planning and Coordination (NCEPC) for identification and investigation of the problems of preserving and improving environment in the country. It manages a number of institutions including the National Information System for Science and Technology (NISSAT). It also plays a catalytic role in promoting S & T activities in the various Ministries.

The Department also deals with the CSIR

(Council for Scientific and Industrial Research) with its many National Laboratories, which have developed more than 1000 processes of which 400 have gone into commercial production, the total production of which is over rupees 400 crores a year. The laboratories, however, need to develop a nuclear design and engineering capability so that they can interact with design and engineering companies/organisations to scale up the operation to the pilot plant stage and then to the commercial manufacture stage at which prototype plants will need to be set up, when government agencies and commercial manufacturers should be fully involved so as to facilitate the transfer of the innovation to the economy.

(2) Other Central Governmental Ministries/ Departments/Agencies which have their own in-house R & D institutions.

(3) At the State level R & D committees have been set up in many States under the joint auspices of the Ministry of Industrial Development and the Department of Science and Technology. They assist the Small Industries Development Services Institutes (SISI) set up by the Small Industries Development Organisation (SIDO) by accepting from them the problems of small industries and referring them to the National Laboratories, engineering colleges etc. for solution.

(4) R & D in industry. In house, RDD is not only the most efficient and relevant form of RDD for industry, it is also essential for taking full advantage of the RDD effort of the National Laboratories and institutions of higher learning. That is why in developed countries the relevant RDD is done largely by the industry itself. Various measures are being taken to induce the private sector to step up its in-house RDD effort. This effort is also being stepped up in the public sector, where the large size of the enterprises, their technological complexity and potential growth offer exceptional opportunities for RDD development.

(5) Universities, IITs, Regional Engineering Colleges and other institutions of higher learning like the Indian Institute of Science, Bangalore. There are two types of universities. Firstly, there are those in which all disciplines are represented and given practically equal importance. Their strength lies in their multi-disciplinary capability. Their main pre-occupation is with basic sciences, social sciences and humanities. They may be called general universities. Secondly, there are professional universities like the Agricultural Universities, the Technical Universities (including the IITs), and the Medical Universities under the name of All India Institute of Medical Sciences etc. In the case of the professional universities, their role in applied research is well cut-out though they must have grounding in basic sciences and humanities. Basic science is at the root of applied science, whereas humanities enable a professional to realise that he is part of society and has certain responsibilities towards it. Research in basic sciences in professional universities, however, ought to be oriented towards the special profession for which the university concerned has been set up. It is in regard to the general universities that doubts and controversies arise. Their role and functions as regards R & D may be briefly summed up as follows:

(1) To create a cadre for R & D work—persons imbued with the scientific spirit of enquiry, with a problem-solving urge, full of confidence, dedication and determination, and fully aware of their social responsibilities. This they can do through an atmosphere of research pervading all teaching and through the teachers sent out reaching the schools and the colleges, where they can identify talent at an early age and encourage it to develop. The presence of a great scientist on a university campus will have a "multiplier effect" far more wide-spread than anywhere else. That is why in most countries the greatest scientists are in the universities, and, therefore, the development of research Institutions and laboratories, which have attracted talent away from the universities, has not been in the national interest. Two steps need to be taken to undo the damage done. Firstly, closest possible links should be established between these institutions and the universities by encouraging the mobility of Scientists between the two. Secondly, new institutions should not be opened outside the university system unless there are very strong reasons for doing so. The university structures should, however, be re-examined to provide for separate institutes within the system where necessary. Other steps which universities can intensify is to improve the quality of student-teacher societies through the presence of able researchers-teachers.

(2) To give grounding in research methodology and in basic or fundamental research. Fundamental research has been the occupation of the universities for centuries. In our impatience at the slow pace of basic research and its generally unidentifiable goal as well as the presence of pressing needs against scarce resources, we sometimes tend to decry pre-occupation of the universities with fundamental research. But fundamental or basic research is the mother of applied research and hence essential. Moreover, the effects of basic research though delayed are epoch-making. While the objectives of applied science is limited and specific that of basic science, while being vague, are very wide-ranging in their effect. As basic research looks for laws behind phenomenon, when it succeeds it solves not only one problem like applied science but many problems. The effect is tremendous. As L.J. Thompson said long ago, while applied science leads to reforms, basic science leads to revolution. Moreover, as there is no other place where basic research can be pursued, it is the primary function of the universities to pursue it. As basic science is international it poses a serious challenge to the researcher and calls for rare dedication and creativity which has a very important contribution to make in creating an atmosphere of excellence and high endeavour. Through their pre-occupation with fundamental science which creates technology the universities contribution to R & D must be fully recognised. This pre-occupation with

fundamental research, however, need not mean shutting ourselves up from our own environmental problems. Prof. Raman created international science, excited by the blue of the waters near him and the blue of the skies above. Louis Oasteur, the father of micro-biology, developed its principles while he was trying to solve the problems of wine-making and disease of the slick-worm. Another point which is often forgotten is that compared to technology basic science is very inexpensive.

(3) During the last 50 years or so the universities have slowly moved into the area of R & D or that part of research which is directly concerned with technological development or is aimed at marketing technological innovation. The practice, however, has not become very common except in countries like the USSR, the USA, Japan and West Germany. Here a major part of the university research programmes are financed by the Industry/Government for specific development objectives. The USSR adopted this approach after the October Revolution and it resulted in spectacular development of Soviet technology, especially after the Second World War, culminating in the sending up of Sputnik I into space in October, 1957. That shock the complacence of the USA, which feverishly set about restructuring its R & D infrastructure to catch up with the Soviets. One of the measures was the radical reform of their higher education system to make it more socially relevant, with special emphasis on technological development.

In India, this role of the universities has been realised and was evidenced by the R & D work in the IITs, Regional Engineering Colleges and the Centres of Advanced Study in the universities. Much of this research was funded by the user agencies like the CSIR, the Atomic Energy Commission etc. This trend was reinforced with the setting up of the NCST. The Draft Five-Year Plan makes a modest move in this direction:

> "While the concentration of effort in universities will continue to be on basic sciences, it will be useful for university teams (as for teams in other laboratories) to take up some goal-oriented, time-bound projects so as to enhance the sense of purpose and time and cost consciousness within the scientific academic system."

This trend is likely to be strengthened as the universities improve their capability and the demands of the S & T Plan increase. For theoretically the universities are ideally suited for multi-disciplinary activity involving team-work as most scientific and technological research today is.

(4) As a part of their participation in the R & D chain of activities the universities will have to increase their consultancy services to industry, with which they will need to increasingly interact, and extension services to the community where the R & D relates to agriculture and cottage industries. The Agricultural Universities have already forged close links between education, Research and Extension. The medical colleges and institutes have to be closely linked with the community to collect the data required for their research and extend the benefits of their research to the beneficiaries. The University Grants Commission not accords as much credit to extension as to research.

(5) The universities being multi-disciplinary have a great advantage in preparing cadres for Technology Assessment (TA), which is becoming increasingly important and is the science of the future. The post graduate and research students in various disciplines, including the Social Sciences and Humanities, will need to be constituted into inter-disciplinary teams and exposed to the techniques of TA and their capabilities developed for assessing the impact of technologies. They will thereafter be able to participate in teams that may be set up for this work.

(6) The universities have an important part to play in assisting Government to formulate Science policy and programme including those relating to import and export of technology, international collaboration etc.

To discharge their functions mentioned above with any degree of efficiency the universities will have to interact with the other parts of the infrastructure: the NCST, the National Laboratories, ISRO, Atomic Energy Commission etc. as well as improve their general sense of responsibility towards development. The agencies that will be responsible for giving the necessary impetus in the desired direction are the University Grants Commission for the General Universities, the Indian Council for Agricultural Research for Agricultural Universities and the Indian Council of Medical Research for medical institutions.

Universities—Present Position and Future Needs

The research in universities (including the IITs and other institutions of higher learning) may be dealt with under three broad heads: (1) Research in science and technology, social sciences and humanities being conducted in universities and institutions of higher learning, being guided and assisted by the University Grants Commission (UGC), either by itself or in cooperation with other agencies / organisations like the ICSSR, ISRO, CSIR etc or directly by the Ministry of Education as in the case of IITs; (2) Agricultural research being conducted in agricultural universities being guided and assisted by the Indian Council for Agricultural Research; and (3) Medical research in colleges/institutes assisted and guided by the Indian Council for Medical Research (ICMR) or directly by the Ministry of Health as in the case of the All-India Institutes.

FIRST CATEGORY

Science and Technology

The most comprehensive and finally determining indicator of policies and programmes is the product thereof—the Ph.D. in this case. Their value is in turn determined by their utilisation pattern—whether they are employed and whether they are employed and paid according to their qualifications. The studies of the utilisation pattern of Scientific and Technical Manpower conducted by the Institute of Applied Manpower Research at the instance of the Department of Science and Technology as well as the study by Dr Barua of the DST indicate that the engineers in production earn much more than those engaged in research. Many take up post-graduate courses while waiting for jobs and give them up as soon as they get them. In the spectrum of scientific and technical man-power, the science Ph D.s are much worse off. because of their larger supply and poor quality—poor because the best students do not join science courses and prefer to join engineering, medicine, agriculture, commerce etc. and even among those who do join it is not the best who go up for research. In view of the shortage of jobs the better students take them up as soon as they find them especially as the prospectus for Ph. Ds are not very bright. Some of them are employed in the lowest salary scales in the R & D complex. The Barua-Gupta study estimates that "only 77,000 scientists against the stock of 2.43 lakhs are employed in the R & D and teaching institutions, including schools, where their qualifications may be gainfully utilised." Others are either unemployed or employed in jobs where their science qualifications are not utilised. The following table 2 taken from that study is revealing:

Study of the Institutional Sector (p-72) has a similar story to tell, it says:

> "..in research areas other than Atomic Energy, as many as 12.1% doctorate degree holders in agriculture/voterinary 5.7% doctorate degree holders in Engineering and Technology 12% post-graduate degree holders in Medical and Health Sciences and 11.1% doctorate degree holders in natural sciences are placed in the two lowest salary groups which, according to the revised salary scales, broadly correspond to salary scales for Technicians and Assistants. That means that more than 10% of the doctorate degree holders are occupying positions equivalent to those generally manned by undergraduate diploma holders or semi-professionals."

In private sector industries the position is much worse. 19.2% of Doctorate degree holders in Engineering and Technology and 35.1% of Doctorate and 61.0% of Master's degree holders in natural sciences are placed in the lowest pay scale slab of Rs 425 and below, while only 16% of the bachelor degree holders in Engineering and Technology are placed in that scale. The study concludes that there was hardly any correlation between the earning and the level of educational qualification of the qualified S & T personal employed by the private sector. This raw deal to researchers and other highly qualified personnel cannot but adversely affect their morale.

In regard to the quality of our scientists, some of our top-most scientists and technologists in the country expressed themselves in two panel discussions arranged by The Hindu, already referred to. They felt that while we had the third largest force of QSEs (Qualified Scientists and Engineers), their number would be considerably reduced if we applied the test of a true scientist's urge for an capability of problem-solving. The majority of our S & T force is of middle, if not mediocre level. We have hardly made any significant contribution to international science during the last 30 years.

The present situation is most unfortunate because science and technology require a very large share of the most creative talent, especially for research in

TABLE-2

Career-path for Science Post-Graduates (M.Scs.)
and Engineering & Technology Graduates (BE/B. Techs.)

Age	Science Research/Teaching	Engineering	
		Research	Professional
21	Rs 400 Ph.D. Student	Rs 400 M. Tech. Student	Rs 700 Graduate Trainee in Public Sector
23	Rs 400 or Rs 500 Ph.D. student	Rs 600 Ph.D. student	Rs 1100 Assistant Engineer
25	Rs 600 Post-doctoral	Rs 600 Ph.D. student	Rs 1200 Assistant Engineer
29	Rs 1100 Scientist 'E' or Lecturer	Rs 1500 Scientist 'C'	Rs 1800 Executive Engineer
35	Rs 1500 Scientist 'C' or Lecturer	Rs 2000 or more Scientist 'E' Associate Professor	Rs 2300 Supdt. Engineer

basic sciences, where the discovery of laws behind phenomena is far harder, also far more significant, and where the scientist has to compete with international science. A national wage policy is perhaps the only remedy to enable science and technology to get their fair share of creative talent. Other measures would include the development of in-house R & D in industry. The Draft Five Year Plan (1978-83) has included many steps which are proposed to be taken towards this end. Vocational guidance should also help in preventing the over-flow of science graduates, which lowers their market value. Development of suitably job oriented courses at or after the graduate and post-graduate stages, combined with entrepreneurial training to enable them to settle in self-employment, would also be helpful. Suitable vocational courses are especially important as the continually diversifying economy and industry are throwing up new opportunities and shortages of various categories exists side by side with superfluity. The absorption of science course products at various levels will draw into the science stream better and more talented science students. The condition of admission to Ph.D. should, however, be very strict, so that only those go in for research who are really fit for it. Those who complete their research with distinction should have prospects as bright in R & D as equally bright students command in other sectors. To promote inter-disciplinary research capability, the Education Commission has recommended that bright young engineers should be encouraged to enrol for Ph.D, in basic sciences if they so choose. To improve the quality of the Ph.D. entrant and his aptitude for research, top research scientists should take graduate and post-graduate classes and some of the bright students should be initiated into research methods from the under-graduate stage itself. Another step which will immediately help the future researchers would be the introduction of much greater flexibility in the choice of course combinations. That would develop the student's inter-disciplinary capability. Moreover, some of the modern technologies like Atomic Energy and Nuclear Technology Electronics and Space Technology are highly inter-disciplinary. Hence the emphasis on the inter-disciplinary character of all courses, including the Ph.D. in countries like the USA, the USSR, Japan and West Germany. Early initiation into research and contact with top-ranking scientist at the under-graduate and post-graduate stages, combined with careful identification of priorities as the NCST is doing, should enable the student to choose his subject for Ph.D. research much more discriminately than today when he has to depend only on a second rate guide to suggest the subject to him as his teacher had done it for him years back. The number of students a teacher can guide should also be limited so that he can give to each student adequate attention which is not the case today. Ph.D. students should also be engaged partly in teaching. Live contact with brilliant post-graduate students should act as a stimulus to them in their research.

As regards teachers, the place of front rank scientists, as in developed countries, is the universities where they can exert their maximum 'multiplier effect.' Unfortunately the setting up of the National Laboratories denuded the universities of talent. Nor are we always very particular about talent and experience when we select our teachers. As Dr Alladi Krishnan pointed out we are quite compromising on that account. Nor do we consider their research work as of critical importance when promoting them. Even in regard to delegations to foreign conference it is not the research work of a scientist that counts but his connections with the official world. In foreign universities teachers have to give 50 per cent of their time to research. Here at least one-third should be given for research The research that is carried on is very often linked to priorities of international science and of peripheral importance to the country. The local environment, where they could do front-rank science because they alone would be looking at it, is ignored. The atmosphere in the universities is not conducive to serious research work. 'Parasitic' team work, where the name of the head of the Department invariably appears on research papers produced by the faculty damps the enthusiasm of the young faculty members. Procedures for release of grants are also very irritating and frustrating to the active researcher. Incentives for good teachers and research workers in terms of preferential treatment do not exist. The higher salary scales, which should have acted as an incentive are enjoyed by all and sundry and are taken for granted. There is also lack of mobility of teachers within the university system itself and between the universities and national laboratories and between the universities and industry.

To remedy the situation a multipronged attack would be necessary. The most important and perhaps the most difficult task is to create an atmosphere of serious study and research in the universities. It is, however, a very complex issue. Secondly, in recruitment and promotions, the criteria of ability and dedication ought to be applied much more rigorously and performance in research ought to be given considerable weight.' Thirdly, mobility of teachers within the university system and between the university system and the National Laboratories as well as industry should be promoted. People within industry ought to be called for short or long periods and given respected positions within the university system. Similarly eminent scientists in the universities ought to be invited to hold honoured positions in industry. This is happening in Holland and Germany, for example, as Dr Kiran Karnik pointed out in the panel discussion on "Progress of Science and Technology." Again, in these countries at least four-fifths of the university Professors are people who work for one or two days in a week in the university and the rest of the time in industry, in research or production. They are designated as professors and guide research students of the universities. Most of the students get their Ph.D. degree, working in the research establishments of industry. Vast changes are required in the attitude and structures of industries and the universities before research work in the universities can contribute effectively to industrial development. Fourthly, universities should develop the capability for and provide consultancy services to industry, which will stimulate the faculty by bringing in monetary gains and recognition. Fifthly, an atmosphere of a scientific community should be created and a feeling of pride in their work appreciated by their peers. The setting up of a national organisation of scientists, which would represent India on international scientific organisations, advice Government on scientific policies, establish international relations in science with other countries etc. would be an important step to create that atmosphere. Quality journals should be started—some have been started—in which scientists publish their research papers and seek the recognition of their peers. Conferences should be organised, performance in which should form the basis for selection for delegations going abroad. Sixthly, centres of excellence should be created, within the university system, where our top scientists could find full expression. The setting up of Centres of Advanced Study is a step in the right direction. As many teachers as possible should be recruited in the universities from these centres to maximise their 'multiplier, role and justification in a democracy. Lastly, participation in joint projects, as are now being promoted by the Department of Science and Technology, would also cross-fertilise ideas, give scope to wider talent recognition and prevention of a feeling of stagnation.

The University Grants Commission has, launched a number of measures in some of these directions which need mention. They have instituted a number of scholarships/fellowships/associateships to encourage (apart from students) young faculty members to develop their research potential at an early age, and senior faculty members to visit other institutions/industries for purposes of cross-fertilisation of experience etc. They assist projects of basic research in emerging areas, basic research with clear potential for application and applied research. They also assist publication of research documents. They give travel grants to teachers to attend conferences. They also enable universities to participate in collaborative research within the country and outside. Retired teachers occupied in research are also assisted. The U.G.C. has also a programme of progessive up-graduation of Departments into centres of excellence. With the help of science panels they identify departments which should be specially supported in certain identified areas of specialisation and afterwards considered for further up-graduation. In 1972 the Commission launched a programme of special assistance to selected departments to enable them to develop their potential in certain fields so that ultimately they become centres of excellence in those areas. They started a programme. as early as 1963-64, a programme of Centres of Advanced Study, whereby a limited number of departments were enabled to pursue excellence, inter-disciplinary team-work and aim at international standards in certain selected fields. In 1977-78, 14 centres of Advanced Study were functioning in Science and 33 departments had been approved for Special Assistance. The aim in these special schemes is to enable the universities to specialise in fields of special R&D significance, interact with other R&D institutions, attain international standards and ultimately be in a position to contribute on the frontiers of science. They would also have the necessary facilities to adapt themselves to the changing R&D needs in view of the growing complexity and diversification of the Indian economy. Every effort will be made to give staff, infra-structural facilities etc. to enable them to reach the critical size required for achieving these aims. Realising the strategic importance of these schemes in the country to R&D effort the UNDP agreed to supplement the U.G.C.'s effort by providing the international component. Highly satisfied with the results, the UNDP later assisted a few selected departments out of those receiving Special Assistance from the U.G.C. After reviewing the progress they have recently agreed to provide $ 2.5 million to further assist these departments. This shows the potential of the Indian University system, which we must develop and exploit. Another very significant project that the U.G.C. has launched for active participation of the universities in the country's R&D effort is the U.G.C.—ISRO (Indian Space Research Organisation) Collaboration. The attempt is to try to work out the delicate balance between too specific and narrow research—which sponsored research has a tendency to become due to the very specific preoccupations of the sponsoring agency—and diffuse research which it has a tendency to become if the universities are left to themselves. The academic institutions arrange programmes of teaching, training and research related to the broad areas of Space Sciences, Space Applications and Space Technology to develop trained manpower required for the Indian Space programme. There are also joint research programmes between ISRO and Universities/Institutions. Scientific work is organised at ISRO establishments for students and staff members of universities to impart an awareness of different aspects of space research, especially to students at graduate and postgraduate levels. Multi-lateral cooperation programmes between ISRO, universities, national laboratories and other governmental agencies are also designed, Sponsored research by other organisations like the CSIR, Atomic Energy Commission etc. also gives opportunities to university teachers and research students. These are valuable directions in which the U.G.C. is moving to link the universities more effectively with the R&D effort of the country. Much greater progress, however, in these directions will be necessary in a vast country with a huge university system before adequate policies and programmes can reach the critical precision and size.

As regards priorities in research, they need very careful identification because of limited resources, both of manpower and finance, and unlimited needs. Our universities at the moment are doing mostly fundamental research which also is related to the priorities of international science, where we can make only limited contribution, lacking the infra-structure of the developed countries and being far away from the environment of those countries, which has stimulated their scientists to choose the areas that they have selected. On the other hand, our own environment and problems which could give us first-hand knowledge and creative stimulus, where we have the opportunity of being first in the world, is neglected. That is why the Education Commission emphasised the need of identifying the special thrusts in which we have an advantage and which we should, therefore, develop. One such area which they pointed out was Mathematics, where it should be possible for us to place India on the world map in the course of the next two decades or so. This also coincides with the still greater importance which Mathematics is bound to gain in the next few years because of the cybernetia revolution which should be in full swing by the end of the century and which may have an impact on men even greater than anything that has happened so far in human history. Many other areas, where we have an advantage and which are crying for solution have already been mentioned in another Section. The NCST is our major agency for identification of critical areas of research and university research should take full advantage of it. The Draft Fifth Five Year Plan stated :

> "RDD Programmes have been identified covering a large number of disciplines of science and technology where oriented basic research has to be undertaken by the scientists and technologists in the Universities, IITs and other higher educational institutions. NCST programme cover. areas like minerals, marine resources special materials, meteorology, mechanical and chemical engineering etc.; the programmes are complementary to the applied research programmes to be undertaken under various scientific agencies and departments of the Government."

So a basis exists for the universities even of 'with whom' and 'in which area' to cooperate. The University Grants Commission has also given a clear lead in this matter :

> "While universities will continue to be involved in fundamental research, application—oriented research, especially in collaboration with national laboratories and industries, needs to be specially encouraged in universities. Both fundamental and applied research required the highest intellectual qualities."

> "In order that the universities may be able to contribute to social development and change, they have to be outside the four walls of the class room and get involved in a participatory understanding of some of the social problems. Such research programmes as contribute to social development, especially to rural development, should be encouraged."

> "In the realm of research, itself, both fundamental and applied research should receive adequate attention but in a country with inadequate resources and stupendous problems priority should be given to research projects, that have a direct relevance to the problems of the community."

As regards the material support to science in the form of laboratory buildings, equipment and libraries, the needs are immense and in view of the dearth of resources utmost ousterity, functionability and maximum utilisation should be the guiding principles. Special emphasis should be put on laboratory design and centralised facilities created for research in design and for acting as a clearing house for information on the subject for the guidance of the universities. Expensive buildings should be avoided as far as possible, not only in the interest of economy but also in the interest of science itself. As Fred Hoyle has observed, "people who work in marvellous buildings are dominated by those buildings, whereas it is the other way round for people who work in rabbit warrens. The builders of the great European cathedrals knew this perfectly well. Walk into a big cathedral and it wipes your brain clean of all thoughts. The same thing happens when you walk into these wonderful modern office blocks. The same thing happens all too easily in big science."

So far as equipment is concerned more and more complex, expensive and sophisticated equipment is required. Moreover, it becomes obsolete very soon. To depend, therefore, on imports would not be feasible. One has, therefore, to develop indigenous capability of developing one's own instruments. In view of the importance of science in R&D, the development of instruments industry and R&D therein should be regarded as of the highest priority. Sophisticated equipment whether indigenous or imported—because of its costs—must be centrally available for utilisation by a number of universities. Repair and maintenance facilities should also be developed. Computer facilities and capability in computer science and technology is indispensable to modern science. For the purpose, the University Grants Commission has approved many research projects in the universities involving instrumentation development. The Commission has also approved a scheme for the setting up of Regional Instrumentation Centres for taking up servicing and maintenance activities. service facilities and instrumentation development work. These centres will work in cooperation with the local industries, R&D institutions and the regional offices of the Central Scientific Instruments Regional Organisation (CSIRO) of the CSIR. During 1977-78, the Commission desired to support the setting up of the Western Regional Instrumentation Centre at the Bombay University. University Service and Instrumentation Centres (USIC) are also being set up for repairing and servicing instruments and providing analytical services. Universities are also being helped to acquire computers or buy computer time. Provision of courses to meet the manpower needs of the country in computer sciences, including maintenance and operational personnel is also under consideration.

An indispensable support to research is the foreign journals. Their supply to the universities is inadequate and there is considerable demand for back volumes. The Commission has decided to set up Regional Library Centres by strengthening the libraries of selected universities and making resources of these centres available to other institutions in the region.

To achieve results, the administration of research is as important, if not more important, than any other factor. The main defects in the present administration are loading the Heads of Departments with administrative work, the cumber some procedures by which researchgrants reach the researcher, attachment of too many research students to the head of the Department and parasitic team work where the name of the Head of the department appears on every research paper prepared by the Department. There is then departmental isolation which stands in the way of inter-disciplinary research. Remedies to these problems need urgent attention.

CATEGORY-I

Humanities and Social Sciences

As regards the humanities and social sciences, their development erientation is a post-Independence phenomenon—the one dictating the goals of development and the other forging tools for social transformation. It was their relevance to development that led the Planning Commission to set up the Research Programmes Committee in 1953 to encourage relevant research in social, economic and administrative fields. But the volume of work done was limited—only 400 projects up to 1969. It was to expand this work by an autonomous organisation that the Indian Council of Social Science Research was set up in 1969. In the meantime the UGC had been assisting the research effort in humanities and social sciences of the universities. Their programme of Centres of Advanced Study in these disciplines had already started in 1963-64, when 11 centres in different universities were recognised for assistance. In 1968-69, 2 more such centres were recognised. By 1977-78, however, only 9 centres of Advanced Study in these subjects were functioning in the country. In their programme of Departments for Special Assistance also the humanities and social sciences have their share. The object here too was development—orientation of the humanities and social sciences. The Education Commission of 1964-66 emphasised the importance of developing our research capability in these disciplines. To make up for lag in science, we have an opportunity of contributing to world thought through research in humanities where our rich cultural heritage places us at a special advantage :

> "To redress the balance, we like to think that our scholars will make significant contributions to the sum total of human knowledge and experience in the fields of the social and the pedagogic sciences and humanistic studies, where our old traditions and the present challenges posed by social developments present unique opportunities for creative work."

The Commission noted with regret the comparative neglect in India, where social sciences have been lost, except economics, in the wider fields of humanities for historical reasons and they have not had any appreciable impact on Indian society and policy making, which they could have had, unlike in the West, where during the last forty years, their impact has been deep and extensive and the Commission made certain important recommendations so that the social sciences could get their adequate share of talent and finances, and be geared up for their important role in national development. The emerging science of Technology Assessment to which a reference has already been made, has further underlined the importance of the support of social sciences for making appropriate choices even in technology.

The most important development science is education, "unfortunately, however, for various reasons educational research in India" is still in its infancy. Its quality is small and its quality mediocre or poor." On the other hand education to be meaningful has to be at the heart of development and has to provide it its pivotal thrust. Education in India is out-dated and badly needs innovations. But educational research management has been largely a failure.

CATEGORY II

Research in Agricultural Universities

Developing appropriate technology through research and getting it across to the farmers are crucial to a country like India, which derives about 50 per cent of its GNP from agriculture, where, population growth is always threatening to outstrip the growth of food production and where the large majority of the people are employed in agriculture or allied activities. It was this realisation that led many Committees and Commissions to make recommendations culminating in the setting up of the Agriculture Universities in the country. There are 21 of them, along with the Indian Agricultural Research Institute with a deemed university status. The basic characteristic recommended for these institutions was the combination of education, research and extension, corresponding to the complete RDD chain in industry.

These universities are in various stages of development. Their working was recently reviewed by the Review Committee on Agricultural Universities under the Chairmanship of Dr M.S. Randhawa, the former Vice-Chancellor of the Punjab Agricultural University, Ludhiana. While agricultural education has been transferred to these universities, research and extension have been transferred only in varying degrees, and in many places still continue to be with the State Departments of Agriculture. Another variable has been the quality of leadership that the different universities have been able to get. Their structures in the form of the number of campuses and integration of the various units constituting them has also varied. The lack of coordination of the various universities in a State has led to duplication of effort and wastage of resources in many

States. They were also established in different years. Their performance, therefore, differs very widely. Taking them as a whole, however, their impacton agricultural production is already considerable. They have significantly improved agricultural education, trained specialists of quality, reduced wastage and become main centres of disseminating useful knowledge to farmers. They are fostering team spirit and a healthy change in the outlook of the teachers, researchers, farmers and the administrators. "Their direct contribution to programmes like pedigree seed production, fertiliser use and National Crop Demonstrations is impressive."

Many structural and organisational hurdles have yet to be evercome. Financial support has not always been adequate. Expansion has not been always a planned one. The necessary rural orientation, especially in the field of Home Science, is not there. Distortions have crept up in the programme and led to the comparative neglect of basic research, education and extension. Inadequate steps have been taken for feculty development, and so on. It is, however, hoped that with steady State support and wise leadership the Agricultural Universities have a very bright future in this country.

CATEGORY III

Medical Research

A very considerable research effort needs to be mounted for discovering methods of quick expansion of facilities, remedies for endemic diseases, adaptation of the results of research in other countries to our own situation, participation in the international effort to advance the frontiers of knowledge etc. Universities by their multi-disciplinary capability are the best place for medical, as for other research. They are also placed where talent can be identified at an early age and stimulated through a research atmosphere as well as through creative teaching. The Indian Council of Medical Research—founded in 1950 as the successor to the Indian Research Fund Association—therefore, concentrates largely on the universities. Indian medical research, despite its early beginnings, is, however, only a post-independence phenomenon, and has grown under the stimulus of the Five Year Plans. "The Bhore Committee (1946) drew special attention to the almost complete absence of organised medical research in the departments of medical colleges, the lack of facilities for training young minds in the scientific approach to medical matters and the throttling effect which routine work in the institutes was having on medical research." The research support of the ICMR in the form of fellowships and research projects has considerably increased. National Institutes for high level research have also been set up, apart from increasing of research facilities in colleges. The over-all effect, however, has not been very marked. Research effort in the colleges is hampered by the load of teaching and service duties. Again, in government colleges the senior professors are also transferred which seriously disturbs the research facilities they had created round themselves. The system of allowing private practice in some of the colleges also leads to neglect of patient care, which, in turn, adversely affects research. Another short-coming in the research effort has been in neglect of immediate problems. The quality of research is also generally poor. "Efforts were mostly towards collection of disjointed and isolated research work by individuals/agencies in the country. Ad hoc research programmes taken up did not yield commensurate results."

The priority areas on which the research effort of the country needs to be focussed, says the Planning Commission, are major communicable diseases, fertility control, nutrition and metabolic problems and delivery of health service. The new challenges posed by malaria, kala-azar and leprosy have to be met by redoubled research effort to find new remedies. Research would be necessary to investigate the problems that reveal themselves during implementation so that necessary corrective action can be taken. Various alternative strategies for delivery of health services to all and at minimum cost would also be investigated and their validity and effectiveness checked through pilot projects.

The Local Dimension

It may be useful to look at least at one university a little more closely as an example. The author cannot do better than choose the Panjab University of which he has more intimate knowledge than that of any other university. The Panjab University is a major centre of higher education in the country. The University Grants Commission has identified 19 departments—a number larger than in any other university in the country—for implementation of its scheme of teacher fellowships leading to M. Phil. and Ph.D. degrees in Science and Humanities. The ICSSR has located its North-West Regional Centre in the university and operates it in collaboration with the university. The University Grants Commission has recognised its Departments of Mathematics and Geology as Centres of Advanced Study. The Departments of Sociology, Chemistry and Botany have been recognised as Departments for Special Assistance. The Department of Geography has been selected for substantial assistance under the U.G.C.'s major research projects to promote research in population geography. A Central Instrumentation Laboratory is being set up which will serve a number of departments in the university and a number of other universities. The various programmes are indicative of the development orientation and potential of the university. There is, however, no room for complacency; and much more effort will be required to be put in to develop local and national developmental relevance, inter-disciplinary research, oriented basic and applied research, inter-institutional collaborative research etc. The performance of the various departments varies considerably. To some extent it is due to the nature of the discipline concerned but perhaps largely it is the result of varying awareness among the different departments and the absence of suitable structures and conventions which need to be evolved. For example, while quite a number of departments have voluntarily cooperated in some fields with other departments, a suitable mechanism has yet to be evolved so that inter-disciplinary team work becomes a mode of normal functioning. The progress in most of the other universities would be still more modest.

CONCLUSION

Thus university research has to be an integral part of the total R&D infra-structure set-up by various countries to meet the challenge of sweeping changes unleashed by science and technology. The universities because of their multi-disciplinary capability are ideally suited for the comprehensive and inter-disciplinary research effort required for meeting this challenge. To realise their full potential, however, they have to interact closely with the other parts of the total R&D infra-structure set-up in the country. The R&D effort in turn must be guided by our socio-economic goals. The Indian experience is that the Science and Technology Plan ought to be tied up with the over-all development Plan.

Our development goals may be summed up as welfare, security and growth. Their imperatives for our R & D effort, as regards the areas of concentration are: the area of minimum needs; those segments of our economy where the scale of operations would make the R&D effort cost effective; the sectors of high technology where either our security is involved or where it would be in the national interest to remain in the front-line of research; and finally, those areas where knowledge is expanding very fast and we need to develop our capability for making wise choices in regard to the import of technology or equipment. In regard to the strategy to be adopted, its components would need to be: maximum self-reliance, buying outright technologies such as are absolutely essential, which we have the capability of adapting and improving upon and which do not create ecological problems; borrowing only appropriate technology as fits in with our traditional technologies—which must be most carefully and critically examined—our development strategies and the infra-structure available; "leap-frogging", wherever possible, with the help of science of forecasting and our special endowments; promoting greater interaction between science and technology; increasing the efficiency of the R & D effort through intensifying and expanding in-house R & D activities in industry; building up the confidence of R & D men, developing their social conscience of social responsibility; and attracting the best talent to the R & D net-work through improved salaries and service conditions.

For meeting the challenge of these tasks we have rapidly developed an infra-structure since Independence. The total expenditure on R & D has increased from 23 crores in 1958-59 (in 1947 it would be still less) to Rs. 400 crores; and the S & T manpower from about 21,000 to about 2 million. From the S & T manpower point of view, India is third in the world, next only to the USA and the USSR. India is now counted among the industrialised countries of the world. She has been rapidly building up her R&D infra-structure, which consists today of DST with its two apex bodies: the NCST and the NCEPC and a number of institutions including NISSAT and the CSIR; other Central Government Ministries, Departments/Agencies with their in-house R&D institutions; R&D Committees at the State level; R&D industry; and universities, IITs, Regional Engineering Colleges and other institutions of higher learning like the Indian Institute of Science, Bangalore. Since the beginning of the Fifth Five Year Plan continuous progress has been made to weave the entire R & D structure into a system with its various parts interacting with and reinforcing each other. In this complex the role of the universities and other institutions of higher learning is to create a cadre for R & D effort, give grounding in research methodology and in basic or fundamental research, to develop capability—to a limited extent—in applied research, to prepare cadres for Technology Assessment (TA) to provide consultancy to industry and extension service to communities, and advise government on science policy and programmes.

As regards the present position of R&D in the universities, IITs and other institutions of higher learning it is that the best *students* are not drawn towards the basic sciences and research part of the R&D spectrum due to discouraging pattern of utilisation. A national wage policy, which would direct creative talent into required channels and a much more rigorous and discriminatingly flexible approach in the selection of Ph.D. students are required as well as steps to improve their choice of areas of research, guidance and inter-disciplinary capability. So far as *teachers* are concerned, the universities are not attracting front-rank scientists due to the absence of definite preference for research ability in recruitment, promotions and membership of delegations to international conferences. The teachers do not give adequate attention to research 'Parasitic' team work prevails. Procedures for release of grants are frustrating. To remedy the situation a multi-pronged attack is called for: creation of an atmosphere of serious study and research; giving research ability and dedication much greater weight in recruitment, promotions etc.; promotion of mobility of teachers within the university system and between it and the National Laboratories and industry; development of capability for and practice of consultancy to industry; creation of a sense of belongingness to a scientific community; the setting-up of a national organisation of scientists to advise Government: starting of quality journal; setting up centres of excelience, connected with and helping the rest of the university system; and participation in joint projects. The UGC have already launched programmes to improve the situation in many of these directions and the university system has already responded to these initiatives. These efforts will, however, need to be continued over a long period and their scale of operations increased to produce the required impact. Careful identification of *priority areas* is equally important and the universities are being helped in this direction by the work of the NCST and the UGC guidance. The most important point here is to identify which are our most important needs and where we have the maximum advantage in competing for international science honours. Very often the two categories coincide. As regards *material support*, the determining factors are our constraint of resources and our large needs. We need the utmost austerity, consistant with functionality, in laboratory buildings —which will call for considerable research in laboratory design and guidance to the universities; utmost emphasis on the development of instruments industry and of R & D therein to build up maximum self-reliance; and pooling of expensive and sophisticated equipment with centralised provision for maintenance and service facilities. The UGC is moving in these directions also. Regional Library Centres, too, are being set up to increase the accessibility of foreign journals. To achieve results the *management of research* needs considerable streamlining.

So far as the humanities and social sciences are concerned their importance in national development is well recognised and steps are being taken up by the U.G.C. and the ICSSR to make up for the past neglect. Much lee-way, however, has to be made up before they can develop their full potential for supporting development.

Agriculture being at the heart of Indian economy and our existing productivity, on the whole, being very low, agricultural research has to command the highest priority. Under the guidance of the ICAR, 21 universities, along with the IARI, have the responsibility for agricultural education, research and extension, the close linkage of which is the basic feature recommended for these universities. The Universities are, however, in varying stages of development, depending upon the functions actually allocated to them by the State Governments, the inputs and leadership provided etc. Their impact, on the whole, however, has been considerable on the quantity and quality of cadres and agricultural productivity through research and extension. Their shortcomings have been pointed out by the Randhawa Committee and with State steady support and wise leadership, the Agricultural Universities have a bright future.

The problems of health and family welfare pose serious challenges to medical research. Medical Colleges and independent institutes constitute the infra-structure for it. The Five-Year Plans have provided the funds through ICMR and the Ministry of Health. The priority areas have been identifed. Medical research, however, has still to pick up the required momentum. □

Significance of Non-formal Education

(*Continued from page 227*)

system is characterized by an unusual degree of rigidity: innovations are slow and difficult. and the content of education often lags behind the changing social reality. It either prepares the pupils for nothing in particular or it trains them for very specialized tasks—a kind of specialization, the social consequences of which are questionable. Education has become an item of consumption—a status symbol —and with every passing year its costs are multiplying. Many developing countries, and even some of the developed ones, find the financial burden unbearable. Undeniably education can be a meaningful human input towards development, but many aspects of its content and quality are such that it becomes dysfunctional towards this end. Several critics have pointed out its stereotyping effect. It produces "packaged commodities" and generally curbs creativity. Many vulnerable sections of society and their special problems go unattended because of the rigidity of the pattern.

Non-formal education, as a concept and a strategy, has emerged as one possible method of relevant mass education. Given a spirit of community service its cost can be minimal; at any rate, it would not constitute a crushing financial burden. With a dynamic and variable strategy, its programme can be tailored to the specific needs of different groups and segments of the population. The accent in these programmes need not essentially be on academic learning : they could be directly related to vital life contexts and pressing needs of groups and communities. Non-formal education is primarily to be aimed at learning and not at certification, although it could be used also for acquiring qualifications comparable to those offered by the formal system. It need not be viewed essentially as a substitute for formal education, its supplemental role is important. It can take care of areas of learning that are left untouched or at best are dealt with only superficially by the formal system. The entry into it is not barred by any rigid eligibility prerequisites. People can enter and leave the non-formal stream according to their interest and needs. Ideally, it should have both an awareness content and a skill emphasis. The former will generate in the people an understanding of their condition and predicament. The skill component would equip them for efficient handling of the tasks they actually have to perform in their everyday life. Thus, non-formal education can at once establish a meaningful relationship between man and his rapidly changing environment as also between work and education. It may be found specially suitable for peasants workers, and migrants. The learners. under the system, can participate in the educational process at all levels. It can make effective use of educators who are not teachers in the formal educational system. It can prove an important instrument of community advancement, rather than only of individual advancement. In it the potential of culture can be tapped and integrated with some aspects of academic culture. It can be a great help in abolishing the gap and ranking between manual discipliness and intellectual disciplines. Purposive links can be forged between general education and vocational education. It could also develop into a major experiment in self instruction. It is well known that knowledge becomes obsolete in every seven years and it has to be constantly updated. This can best be done through non-formal learning.

The new strategy of non-formal education is still in an experimental stage. Its success would depend on the vision and innovative capacity of those who handle it. It can be powerful instrument for the emergence of a meaningful society and creative education. □

CONVOCATION

Science & Technology in Human Development

Science and Technology has been eminently and awe-inspiringly successful in what one normally refers to as hardware projects relating to products, processes and tasks that are well defined; the most complex of them was the Manhattan project to develop the atomic bomb and man's various adventures into space. But in the complex aspects where hardware and software have to be combined, involving interaction with society and its needs, our successes have been much more limited.

The headlong advance of science & technology has had two important consequences: first it has placed great power in the hands of those who have been able to participate in these advances, powers that can be used for exploitation; secondly the advances in transport and communications have made the world a small place and highly interdependent. These aspects and the growth of human population has brought about a situation where we have to evolve new societal patterns. The existing structure of society can only result in increasing human misery, and conflicts that will grow and enlarge. A new Order has come about; the alternative is chaos. In this connection, the United Nations has called for a New International Economic Order which aims at reducing the disparities that exist between nations; indeed, corresponding to this there will be need for a new internal order in each nation. The problem is really not one of economics alone. It is in human expectations, aspirations and value systems. It would have been better to define this as a New international Order.

What is envisaged is that the growth and human development will, and must, continue. But it should be in a way in which demands on resources and on the environment, are reduced. One would work towards life styles that are less energy intensive. The new order is not meant to impoverish developed countries, but to bring up the developing countries and less privileged sectors of society; a task in which the developed countries have an important role to play. In this process, the different cultures and differences in life styles of different society would need to be safeguarded. Most important, one needs the development of value systems that provide for happiness without putting unnecessary demands on material needs. It is in this intellectual exercise, of working out new and feasible pathways to development in a multi-disciplinary approach to problems—particularly bringing together the humanities, the sciences, engineering, technology and medicine in innovative thinking that can provide leadership of national endeavour that Universities can play an important role.

Some remarks on University education

Those emerging from the portals of this University will be moving into this complex world where rapid and dynamic changes are expected to, and should take place. Unfortunately, a great deal of the educational system has concentrated on past experience and transfer of information. This would be satisfactory if one was emerging into a relatively stable and static situation. The situation is somewhat analogous to learning about a particular piece of equipment and then coming out into the world to handle such pieces of equipment from the point of view of maintenance, repairs etc. But what could one do if the equipment one comes across is something totally new and different. One could then learn by adaptation if the change that has taken place has not been too great. But if the change has been rapid or significant, then one is faced with the equivalent of a cultural shock. What is really needed is an education that looks into the future and which anticipates the nature of developments. Furthermore, it should be what good education was always meant to be; bringing out the latent ability within the individual to think and reason, rather than memorize a large volume of information for an examination. We have been tinkering with the whole process of educational change but have done very little in a substantial sense. An important fact to remember is that the educational system involves human development where the impact of any change can be seen only in the time span of a human generation. One should, therefore, bear this in mind in making changes.

We are, of course, aware of the need for a form of education which enables a human being to become a productive member of society. For this he or she needs training in some profession; this is in terms of skills, techniques and information. Such training starts at the school level. At these levels the examination, certification and maintenance of standards is at the level of Boards of Education and such like; though once upon a time many prestigious universities in India used to conduct even Matriculation examinations. In the case of higher professional training, the aspects of examining, certifying and maintenance of standards is often done by professional associations such as the ones in engineering, accountancy and the like. If the University regards its tasks largely as performing such a function, but only corresponding to a different syllabus, certificate or mode of functioning, then there will be very little justification for the existence of universities created by Acts of Legislature with all the paraphernalia associated with high academic institutions of learning. Clearly, universities represent the apex of the pyramid of learning, of which the schools and colleges form the base. They must be concerned with highest levels of training in areas that involve thinking and not purely skills; this almost necessarily leads to a concomitant development of knew knowledge and insight. Students are exposed to information and thought at the forefront and participate in developing new knowledge and insights themselves. It is thus that the teaching role of a university is strongly linked to research of an innovative and original type, and should be fostered.

If one looks at Universities around the world, one finds a wide spectrum. Prof. Roger Revelle has remarked: ‘American universities are as diverse as the flowers that bloom in the Spring. They are diverse in every way; in size, sources of support, levels of funding, standards for students, and quality of faculty scholarships. Some have many professional schools, others have none. Some lay great emphasis on basic research, others applied science and technology, while in most the quantity of research is minimal and the quality is low.''

In the case of Indian universities, one finds enrolments ranging from a figure close to 2.5 lakhs to a few hundreds; I am not, of course, taking note of universities just set up that might have extremely low enrolment numbers. It is clear that all universities cannot be alike in their character, capability, standards and standing; but we should aspire to have some universities in the country whose standards are comparable to the best in the world, and of which we can indeed be proud. And in this regard, as an alumnus of this University which was founded in 1857, the year of the First War of Indian Independence, I would hope Bombay University would be in that category.

However, if a large part of the work of the university is concerned with an enormous student body and associated problems of management, and where its inputs are primarily in terms of examinations and certification, then that part which is concerned with the highest levels of training and research will be submerged in this larger, more routine, activity. It would be best for a University aspiring to very high quality to restrict itself to the highest levels of teaching and research. On the other hand, since the whole of the educational system from the school and college level, right up to highest level of the university must be regarded as an integrated entity, and the University cannot be stronger than the inputs it receives from the systems below, the University must play a role in regulating the standards of school and college education and also in the process of selecting those who would benefit most at the highest levels that the university represents. The university must also be concerned with improving the standards of school teachers and college teachers on whom depends the standards of education in those institutions. But its own major activities, and in this I am only referring to a University that wishes to have standards of the highest order, must be in teaching and research at the forefront of human kdowledge.

Over the years, financial support for universities, particularly for modernisation, for new items of equipment, for support of research groups, and such aspects on which the ability of the University to accomplish research of a high order depends, has unfortunately been diminishing. It clear that funding for researc cannot be provided uniforml across the board to all instit tions; there has to be a selectiv approach where finances are give to institutions that have demons trated their ability to make mos effective use of them. It is gene rally accepted that university re search is highly cost effective, be cause of the fact that a large par of it is carried out by the studen community who work on a ver enthusiastic and dedicated basis What they need to be provided i the right environment & facilities Enhanced support to universitie on a selective basic is vital an urgent; in providing this, it has t be remembered that the high leve manpower needed for all developmental activities has to be produced by the university system the situation to which the lette has been allowed to run dow should be of great concern t those who would like to see high quality leadership in our developmental activities over the future.

Links between different types of research institutions

We are aware of the existence of many categories of institutions for research. This is as it should be for there is an enormous variety in the pathways to discovery. In India we have basically four categories of research institutions. There are those in the governmental sector such as the national laboratories of the Council of Scientific and Industrial Research, the Defence Research and Development Organization, the Atomic Energy Commission, the Space Commission, etc. Next there are the research components of institutions in the public and private sector that are concerned with industry. Then there is the great sector of research in the educational institutions, largely in the universities and IITs. And finally we have a large number of autonomus institutions, some closely coupled to education, others to industrial management, and yet others on their own. Each of these categories has its own strengths and weaknesses. Each operates in an nvironment different from that f the others and, therefore, sees roblems and approaches from a ifferent angle. In infrastructure, nancing, age composition and nany other aspects, these cateories of institutions are different rom one another. Their research fforts overlap to a certain extent; nd this is all to the good, beause no one approach, regardess of how clearly it may illuminate some facets of knowledge, s likely to reveal all aspects even of a small field.

On the other hand, the history of science is full of examples where tasks have been successfully accomplished by men and institutions which one might have said where *a priori* not the appropriate ones for the purpose. The first operational digital computers were designed and built in university laboratories. The discovery of radio waves from outer space, and of the 3°K microwave background radiation, so fundamental to our understanding of astrophysics and cosmology, and the first experimental demonstration of the wave nature of the electron were all carried out in an industrial laboratory. On the other hand, some of the most significant contributions to World War II, such as the development and application of operations research and the work on the atomic bomb, and more recently the guidance technology which made the Apollo moonlanding and the Polaris submarine system possible were all efforts by those who could be rightfully categorized as academicians. One could therefore say that, in a broad sense, different categories of institutions are appropriate for various categories of problems but that the distinctions need not be too strict or water-tight, for that would be the surest way to frustrate innovation.

What is important in my view is to establish associations and linkages between institutions for research coming in these different categories. For example, a university associated with a government or industrial laboratory may acquire thereby the stimulation of constant contact with applied problems and also have available to it the large scale facilities that are necessary and have been developed for applied research. Correspondingly, the government or industrial laboratory acquires increased contact with the very talented enthusiastic young students and the openness of the university environment. What is required in such a linkage is not purely financing of research in the university by the Government or industrial laboratory, but mutuality in participation. One has also got to ensure that the openness of the university system is not hurt by association with the government or industrial laboratory.

Once Dr. Homi Bhabha proposed the setting up of the Tata Institute of Fundamental Research, he remarked: "The Institute will be affiliated to the Bombay University. The Bombay University could send its advanced research students to the Institute's laboratories to work for their doctorates, for attending the few advanced courses and lectures that would be given on behalf of the University." I had the privilege of working for ten years under Dr. Bhabha at the Tata Institute of Fundamental Research, and then for about a decade I was Director of the Institute. My experience over this period was that University made very little use of the capabilities, the infrastructure and facilities that existed in this institution. The TIFR was no doubt affiliated to the Bombay University and was therefore part of it. Research workers at the TIFR could register for research degree of the Bombay University; but in this matter the University; was only functioning as an examining and degree-granting body. Some links were established only when the University Departments came into existence in subjects of relevance such as mathematics and Physics.

We have a large number of universities throughout the country. In their vicinity there are major research institutions coming under the purview of the Atomic Energy and Space Commissions, the Council of Scientific and Industrial Research, the Defence Research and Development Organization, the Indian Council of Medical Research etc. as also major industrial units, some with excellent R & D facilities. There is however, very little that is being done to establish strong interconnections between the University system and this infrastructure. There are a variety of schemes that I can think of which can be used for this purpose. The most classical is the use of university staff as consultants by industry and national laboratories. Such consultancy provides the academic community with opportunities to get acquainted with important industrial research problems which challenge the scientific imagination. The consultants can be used for probing areas new and unfamiliar to the company or laboratory, as well as for presenting lectures to the staff. It is my experience that very few lectures are given in most Government or industrial Research laboratories. Through these the academic community can be exposed to the industrial environment, its problems and its attitudes. Conversely, it is important to provide visiting professorships, adjunct professorships, participation in university activities on advisory committee etc. to those from industrial and national laboratories. These provide opportunities for scientists, from governmental or industrial laboratories to keep in touch with a broad spectrum of intellectual activity that a university represents and to widen their horizons.

(Excerpts from the Convocation Address delivered by Prof. M.G.K. Menon, Secretary to the Government of India, Department of Science & Technology, at the Bombay University, Bombay-7)

CAMPUS NEWS

Higher education and employment in West Bengal

A two-day Workshop on a study of 'Graduate Employment and Higher Education in West Bengal' was inaugurated by the Governor of West Bengal at the Ramakrishna Mission Institute of Culture, Calcutta. The study which was sponsored by the International Institute for Educational Planning and supported by the University Grants Commission, the State Government and the Calcutta University, was conducted by the Department of Statistics, Calcutta University.

The study, initiated in 1978, involved an analysis of secondary data relating to the socio-economic conditions of West Bengal, the growth of higher education and the employment and manpower situation in the state as also an analysis of data collected through a sample survey which canvassed 1928 students, 1343 employed graduates, 480 graduates job-seekers and 32 employers.

Some of the major findings of the study were as follows:

1. An examination of reasons for the pursuit of higher education shows that 60% or more of the responses are either 'needs of a specific future career' or 'better opportunities for employment.'

2. Majority (29%) of the students depended on their parents and relatives for career information.

3. More than half of the students do not expect to wait for more than one year beyond graduation for getting a regular job. Their average expected waiting time (17 months) is much less than the average period spent by graduate job-seekers without gainful employment (66 months).

4. The greatest percentage of students expected to be in the teaching profession.

5. The expected initial monthly salary of a student worked out at Rs. 677 as against the average minimum acceptable salary of graduate job-seekers being Rs. 556. Proficiency in English is looked upon as an important criterion for selection of graduates for a job. Incidentally, institutions of higher education are gradually reducing emphasis on English.

6. Nearly half of the responding students were willing to be self-employed.

7. About 80% of the responding employed graduates found their educational qualifications necessary for getting their jobs.

8. About 28% found their academic qualifications useful but inadequate and about 12% found these irrelevant.

9. A majority of job-seekers ascribed their failure to get jobs due to lack of help from relatives and friends and from political connections.

10. While students preferred 'allowing teachers to refresh their knowledge with related field experience', chiefs of the personnel functions suggested an exchange of faculty in educational institutions with executives in employing organisations.

About 70 participants attended the Workshop and the following topics were discussed in five sessions:

(i) PRESENTATION OF THE STUDY;
(ii) REVIEW OF THE STUDY;
(iii) HIGHER EDUCATION-GENERAL;
(iv) HIGHER EDUCATION-PROFESSIONAL; and
(v) HIGHER EDUCATION & EMPLOYMENT.

Some of the important statements made during the Workshop are listed below:

1. The Government should identify its potential recruits and arrange for their training for the respective jobs immediately after their high school education. Only those to be entrusted with teaching and research assignments as also those who like to pursue higher education for its own sake should be allowed to take collegiate and university education.

2. Education should not be regarded as a preparation for jobs and jobs should be delinked from degrees.

3. The extent of unemployment among graduates must be examined in the light of the quality of education received by the graduates and the definition of unemployment.

4. The notion of mis-employment should be reviewed in the light of experiences abroad. Thus a highly qualified person teaching in a secondary school should not necessarily be regarded as being underemployed or mis-employed.

5. The system of education in a country should be viewed as only a sub-system within the national socio politico-economic system and this system rather than the education sub-system should be expected to provide any solution to the problem of unemployment.

6. The numerical extent of graduate unemployment can be easily put down by curbing enrolment in higher education, provided social demand for education can be suppressed. However, this would be a wrong approach to the problem since this cannot imply any solution to the basic problem of educated unemployment.

7. The employability of a graduate is determined not merely by the quality of education recei-

ved by him/her (something which appears to be rapidly deteriorating) but also by the integrity of the employment process.

8. The problem of educated unemployment in our country has come to assume such a dimension that an economic solution cannot possibly be obtained. Only an ethical or moral solution can be sought involving a change in the attitude and value judgements of individuals, although a reorganisation of wage structures and a more uniform distribution of the national wealth can provide some economic solution to the problem.

6. Effective liaisons should be established between educational institutions and employing organisations.

Seminar on Gandhian studies

While inaugurating a 3-day All-India seminar on Gandhian Studies organised by the Kurukshetra University Prof. S.C. Dube, Vice-Chancellor, Jammu University, Jammu, emphasised the need to creatively interpret and employ Gandhian ideas towards the solution of our contemporary problems. He highlighted the various facets of Gandhiji's personality and his thought. Gandhiji's perceptive insights into the socio-economic problems facing the Indian people particularly have a meaning and significance in the context of contemporary situation, he added. Professor Dube further said that the issues raised by Gandhi related to the relationship between man and his work, between men, nature and society, have greater relevance today than they had when he first raised them. It would be unfair to dismiss Gandhiji's ideas as anti-science and anti-technology. Gandhi in fact had a premonition that the path of science and technology would lead to degradation of environment, pollution of atmosphere, ecological imbalances and depletion of natural resources. Besides, industrially developed countries have discovered, to their dismay, utat material wealth is not a solthion of social and psychological problems. Gandhi was against science for these reasons, Professor Dube pointed out.

Prof. Vikas Mishra, Vice-Chancellor, Kurukshetra University, in his presidential speech talked of two types of correspondences in the life of every great man. First type of correspondence is concerned with what he says and what he does, while the second type relates to the belief that everything is transitory and all that follows from it in various aspects of life.

Workshop on the strategies of integration of teaching skills at Indore

The Department of Education, University of Indore, organised a Workshop on "Relative Effectiveness of different Strategies of Integration of Teaching Skills." About thirty participants from the different parts of the country i.e. Assam, Delhi, Gujarat, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Nagaland, Orissa, Tamilnadu and Uttar Pradesh, attended the Workshop. These participants had conducted various research studies aiming at to find out the effectiveness of different strategies of integration. Most of the research studies reported that a particular strategy of teaching skills does not differ from other strategy of integration. It was decided that these research findings should be replicated by employing suitable research designs and modified measuring tools.

The Workshop was sponsored by the NCERT.

Plant protection workshop held at Bidhan Chandra Krishi Vishwavidyalaya

The Bidhan Chandra Krishi Vishwavidyalaya organised a first State Level Workshop on Plant Protection. The topics discussed at the workshop included (i) Research; and (ii) Development. The following recommendations were made at the workshop.

1. A Coordinated programme on survey and surveillance of pests and diseases in different agroclimatic zones should be undertaken.

2. Assessment of crop loss due to major pests and diseases should be undertaken.

3. Interactions of pesticides with the predaters and parasites under different agroecosystems need to be studied.

4. Specific research should be conducted on (a) ecology of wheat ear-cockle disease in West Bengal (b) Intensive screening of local varieties for (disease and pest) resistance against different diseases and pests. (c) Survey on the pest and disease situation of paddy in the districts, adjoining to Bangladesh and other States with special reference to the migration and prepetuation of them.

5. Research on pests and diseases of pulses and oilseeds should be intensified.

6. Specific research should be undertaken on (a) Identification of virus diseases or pulses (b) Ecology of soil borne diseases of pulses (c) Breeding for resistance against rust disease of groundnut (d) Control of *Alternaria* blight, seed and seedling rot of Barassicas (e) Ecology and control of gram pod borer (f) Ecology and control of the pests of *Cajarus* and other pulses (g) Ecology and control of common pests of *Brassica*, *Sosamum* and safflower.

7. Investigations should be made to indentify the common pests and diseases of vegetables, having economic significance.

8. The pest benefit ratio of all the control measures should be made before recommending any method.

9. Research on alternative chemicals with low mammalion toxicity to pesticides of high residual toxicity should be undertaken.

10. Research on cultural and biological control methods for the important diseases of vegetables and potatoes should be undertaken.

11. Study on the diseases of vegetable and potatoes in transit, storage and in markets should be

initiated including screening of varieties for resistance to post-harvest infection.

12. Investigations should be undertaken for the integrated control of common pests and diseases of fibre crops.

13. Varietal screening for leaf blight of mesta and resello and cultural practices for the control foot rot diseases of them should be undertaken.

14 Research on the use of natural enemies for the control of jute pests should be undertaken.

15. As enough informations are not available on the pests and diseases of fruits and plantation crops in West Bengal extensive Research should be undertaken on these crops particularly on banana, pineapple, citrus, guava.

B. Development

1. A Coordinating Unit with the representatives of different Institutes, Universities, Colleges and the Directorate of Agriculture, dealing with plant protection should be formed for effective mobilization of the scientific manpowers towards cooperative, collaborative or complementary research for providing basic technological and scientific data pertaining to plant protection within this state.

2. Seed health testing unit should be organized in the programme of seed certification.

3. A unit for organizing regular training programmes on plant protection should be formed.

4. A laboratory for testing the pesticides should be established in West Bengal.

5. State level workshop of plant protection including the scientists, extension specialists and plant protection officers may be organized periodically on the crops under different farming systems.

6. Collaborations between the breeders, entomologists and pathologists should be established for breeding disease and pest resistant varieties.

7. A standard nomenclature for pests and diseases in vernacular suitable for mass media and extension workers, is to be prepared.

8. Roving and fixed plot survey for pests and diseases should be strengthened in all the agroclimatic regions and the scientists of the Agricultural University and institutions may be included in the team.

9. General awareness of the cultivators for the pests and diseases, their relations with environmental conditions agronomic practices, cultural methods, post-harvest practices etc. should be developed.

10. Regular training courses for the extension workers, pesticide dealers, and the cultivators should be organized on the techniques of plant protection and on the integrated control of pests and diseases.

11 Methods of communication should be improved using the modern techniques and should be regularly evaluated.

Survey of living conditions in hostels

The University Grants Commission has before it a survey of living conditions of students in university and college hostels, for follow-up action. The survey was undertaken by the Tata Institute of Social Sciences, Bombay, at the instance of the Commission following a suggestion made by Vice-Chancellors at a conference in 1975 that hostel facilities in the country were far from adequate.

The survey found that nearly half of the hostels in the country were unable to accommodate all those desirous of admission. While the majority of the hostels were adequately maintained, a large number were poorly looked after. A few of them were a hazard to life and limb.

It said that most of the hostel buildings had been put up after Independence. The sixties was the decade of the greatest growth. There had been a special effort after Independence to provide facilities for women. In fact, more women's hostels were built after Independence than men's.

It found that the provision of facilities in women's hostels was generally adequate and better than Men's. The cost of living was also lower. Few women's hostels had the kind of problems which men's hostels faced where it was found that rules, if they did exist, were broken with impunity in many of them since the hostel authorities did not enforce them. In general, however, in a majority of the hostels, students had learnt to be tolerant and got along with one another. They had also developed a sense of community.

One of the main findings of the survey was that the best provision of hostel facilities was in Punjab, Haryana, Kashmir, Himachal Pradesh, Delhi, Chandigarh, and to a lesser extent in Uttar Pradesh. Hostels in these States had a higher cost of living than elsewhere and also suffered more, comparatively speaking, from problems like drinking, clashes between groups of students and a general lack of discipline.

The worst provision of facilities according to the survey was in Bihar, Orissa, West Bengal, Assam, and the adjoining States and Union Territories.

The survey suggested the provision of multi-seating rooms or dormitory-type hostels for undergraduates in view of the rising cost of construction. Each room or dormitory could accommodate about 4 to 10 students. Provision for separate study halls should also be made, it felt.

To cut down on cost and improve the quality of food in students' messes, the survey suggested that workshops should be held for wardens in areas like budgeting, mess management and nutrition. More than half of the hostels were under-staffed, according to the report. The number of inmates in these hostels exceeded 50 for every single warden or senior staff member. In fact, in a few of these, the ratio even exceeded 1:100. The survey strongly recommended that steps should be taken to bring down the ratio to 1:50.

Residents of medical and engineering hostels were provided with uniformly good and often excellent facilities. In comparison, hostels for students of Arts, Science, Commerce and Education were the worst in the matter of facilities. The provision of facilities was also generally poor in hostels which catered predominantly to students from the low-income groups.

The survey called for efforts to reduce food cost. It said that for poor and needy students, all hostel dues except mess bills should be reduced to a token change, or waived altogether.

NAEP report presented

The Report of the National Adult Education Programme Review Committee was presented to the Union Education Minister, Shri B. Shankaranand. by Prof. D.S. Kothari in New Delhi recently. Speaking on the occasion, the Union Education Minister said that, one of the great things about Rabindranath Tagore was that he combined in Visva Bharati school education, higher education, culture and rural development. Sriniketan which is an inseparable part of Visva Bharati can be treated as a model of how every institution of formal education—universities, colleges and schools—should concern themselves with programmes of development of the community around them, including their education. Tagore did not treat Sriniketan as an incidental and unimportant activity of Visva Bharati but gave it immense importance. It would be a great day when all universities will move in that direction. It would help in programmes of rural development and adult education, but what is more important, it would be the beginning of reform of our educational system—the central aspect of which has to be the relevance of the system to the community in which it exists, particulaly the illiterate and the poor among them.

ISM to start postgraduate programmes for Petroleum Industry

Indian School of Mines which is deemed to be university since 1967, has received clearance of the University Grants Commission to start two postgraduate programmes for the Petroleum Industry, viz., an M. Tech programme in Petroleum Engineering (for graduates of Mechanical and Chemical Engineering) and an M.Sc. Tech programme in Petroleum Exploration (for holders of Master's degree in Geophysics etc). With this additional sanction, all the main Deptts of the School are now offering postgraduate programmes. This postgraduate activity which started at the School in 1973 now covers a very broad spectrum covering Mining Geophysics, Mineral Exploration, Petroleum Exploration, Engineering Geology, Drilling Engineering, Mining and Mine Planning, Mining Machinery, Fuel Engineering, Mineral Engineering and Industrial Management, in addition to M. Phil courses in Applied Geology, Applied Geophysics and Applied Mathematics. In addition, the School offers two Advanced Diploma courses, one in Mine Surveying and the other in Mining Instrumentation and Communication.

Modified tution fees for the research scholars

The Syndicate of Madras University at a special meeting held recently to consider the demands of the research scholars decided to reduce the research and tuition fees for the Ph.D. and M. Phil students. The revised rates will come into effect from the academic session 1980-81.

The research fee for Ph.D. scholars has been reduced from Rs. 450 to Rs. 300 per annum for science and from Rs. 150 to Rs. 100 per annum for humanities. The tuition fee for M. Phil students which was earlier fixed at Rs. 350 for both science and humanities has now been reduced proportionately. According to the new formula the fee now works out to be Rs. 1,000 for science and Rs. 500 for humanities.

The fee for Ph.D. registration and for the submission of synopsis of the thesis has been reduced from Rs. 100 and Rs. 300 to Rs. 50 and Rs. 200. In the implementation of these scales no distinction between stipendiary and non-stipendiary scholars will be made.

The Syndicate decided to request the Vice-Chancellor to negotiate with his counterparts in the Perarignar Anna University of Technology in order to maintain the level of admission available hitherto in the P.G. Hostel in A.C. College campus. Negotiations are also to be started with the management of Sri Venkateswara Hostel for accommodating research scholars in the hostel. A one-man committee has been constituted to look into the other requirements of research scholars.

There has been a drop in the number of students in affiliated colleges by 57,000 due to the shedding of the Pre-University course and the formation of the Perarignar Anna University of Technology. There was also a downward trend in the number of women students taking to collegiate education in the last few years.

Delhi plans for development of Colleges

In view of uneven growth of various colleges under Delhi University, a draft plan has been prepared by a committee appointed by the university to balance the development of colleges over the next ten years. The ten member committee would be headed by Mr. Mohinder Singh, Dean of Colleges. It has been reported that since the inception of the university colleges run by private trusts have flourished. Most of these colleges are on the main campus. Good students from all over the city tend to flock to the campus colleges with the result that the colleges in South, West and East Delhi face neglect both from the funding authorities and the university.

After carefully studying the problem of every college, the committee has suggested that within the next years all colleges must have buildings of their own. Introduction of honours and post graduate courses should also be equitably done in campus as well as non-campus colleges for their academic development.

The development plan prepared by the committee pointed out that the faculty, in most colleges, is practically of the same calibre. But the state of under-development of some colleges discourages students to come to them.

Divided into two phases, the plan envisages introduction of commerce honours courses to women's colleges in view of the growing popularity of the subject among them.

The draft plan has been sent to the colleges for their comments. It would soon be submitted to the UGC and the Ministry for necessary action.

Agra gets UGC grants

The University Grants Commission has agreed to provide Rs. fifty lakhs to Agra University for its development programmes during the Sixth Plan period. The university is busy in preparing schemes for the next five years and top priority will be given to enriching the libraries at different centres and expansion of the laboratory facilities. More than 50 per cent will be spent under this head and 20 to 25 per cent will be spent on meeting the staff requirements. The remaining amount would be utilised on the construction of new buildings. The university is understood to have decided that since the allocation was limited the affiliated colleges will not be benefitted under this programme and the amount will be spent to strengthen the teaching and research activities of the university. These institutes are: K.M. Hindi Institute, the Institute of Social Sciences and the Institute of Household Art and Science. An attempt will be made for greater coordination among the three teaching institutes.

The university has also decided to strengthen the library for research activities. It also decided to add teaching of library science in the university during Sixth Plan period. This means the university does not propose to include the correspondence courses for students and Tourism as a subject even during the next plan period.

The university is also preparing the blueprint of an ambitious plan of building residential houses, a modern guest house and a spacious hall for expanding university activities and for the benefit of girls studying at the Institute of Household Art and Science.

AIU brings out several Status Reports

A status report on grading in universities has been prepared by the Association of Indian Universities. It is found that about 128 institutions have adopted the grading system in 1970. The report is based on a detailed questionnaire survey. It showed that three-fourths of the universities faced no difficulties in switching from numerical marking system to one based on letter grade from E (Excellent) to F (Fail).

Sixty per cent of the university rarely received complaints from students against grading. But most universities have felt the need for a national body to determine the equivalence of grade and marks. The report said that numerical marking system provided a very inaccurate measurement of academical achievement and as a future action has called for the development of conceptual models of gradings system.

Another AIU report on student assessment said that as many as seven universities have no system of internal assessment at all and students are assessed by outsiders. The survey conducted by AIU revealed that in only 10 universities and four institutes the mode of assessment was fully internal. Rest of the universities have introduced in one form or the other, internal assessment giving it a weightage varying from 20 to 40 per cent. Universities whose students are assessed externally are: Bundelkhand, Jhansi, Guru Nanak, Rohilkhand, Bareilly, Saurashtra and Vikram and the universities of Calicut and Saugar. The report said that at present the performance of students was tested almost by the end-of-the-year test expected to produce stereotyped answers involving a great deal of memory.

Kasmir to amend the Universities Legislation

Mr. Mohammed Shafi, Minister of State for Education of Jammu & Kashmir made an announcement that the State Assembly will soon have a Bill to amend the Jammu & Kashmir Universities Act. The Bill provides for setting up of a joint University Council which will be the supreme authority of the two universities of the State. Among members of the Council will be four representatives of teachers, two from each university. For the first time the Bill seeks to provide a tribunal which will hear appeals against termination of service of the employees.

University teachers meets in Bangalore

The Federation of University and College Teachers' Association in Karnataka has planned to hold a State level convention of university and college teachers in Devangere. The convention is expected to discuss several issues of educational and social importance in six different sessions. Mr. S.S. Wodeyar, Vice-Chancellor, Karnatak University will inaugurate the convention and release the commemorative souvenir. Finance Minister Veerappa Moily will be the chief guest at the valedictory function.

Calcutta Election

Mr. Jyoti Bhusan Bhattacharya, former Education Minister and Head of the Department of English, Calcutta University, has been elected President of the Calcutta University Teachers' Association. Dr. Asis Ray, Reader, Department of Commerce, was elected General Secretary. Dr. Chandan Roy Choudhury, Mr. Dilip Bose, Mr. Kamal Ghosh and Mr. Sudin Mukherjee were elected Joint Secretaries.

Commonwealth Sports Trust in the offing

The setting up of a Commonwealth Games Sports Trust on the International Olympic Committee Solidarity Programme will be the main item on the agenda of the Federation Advisory Committee meeting of the Common-Wealth Games Federation in London. India will be represented on this meeting by Mr. Ashwini

Kumar. The proposed trust will go into the question of aiding member countries in respect of sports coaching and techniques and other financial assistance on the lines of Solidarity Programme of IOC.

Madras University

The Madras University will have a deficit of Rs. 63.95 lakhs if the State Government does not sanction grants to compensate the loss of income due to the shedding of Pre-University courses.

Jamnagar to start language centre

An Institute of Language Teaching and Research is likely to be set up at Jamnagar as part of the Saurashtra Education Foundation's endeavour to further education in the region. Mr. Amritlal Yagnik, convener of the Advisory Committee said in Bombay that the institute would teach English, Gujarati and Hindi placing special emphasis on the teaching of English which he said had no proper place in the region. He said that the institute would have a well-equipped language laboratory and library, research and reference facilities and audio-visual aids along the lines of other language institutes.

Initially the project would be undertaken at a local centre and would be shifted three years later to their own site. The whole project is estimated to cost Rs. 50 lakhs and would start with 60 students in the initial stages. The Foundation whose source of income is from donations proposes to start a centre of rural technology-cum-informal education to bring technological advancements to rural areas and a science centre to make science popular.

Sanskrit Institute demanded

A demand for the establishment of an Institute of Sanskrit Studies on the lines of the Institute of Kannada Studies was made at the last meeting of the Senate of Mysore University. Some members of the Senate said that the postgraduate departments of the university had neglected research. Efforts should be made to streamline its working. Similarly, a committee should go into the working of the Institute of Kannada Studies and Developmental Studies.

It was noted that the library had utilised the funds allocated but it needed more money for the purchase of books and journals.

Dr. K. S. Hegde, Vice-Chancellor of the university presided over the meeting.

Medical Research Centre in Manipal

Dr. Robert P. Goheen, U.S. Ambassador in India dedicated the Dr. T. M. A. Pai Research Centre in Manipal to the Kasturba Medical College.

Dr. Goheen referred to the missionary zeal of late Dr. Pai to promote the cause of education and particularly professional studies like medicine and engineering. Without depending on Government or other philanthropic agencies, Dr. Pai involved the people themselves in a big way in building up an educational and medical complex near Manipal. The research centre was a fitting memorial to Dr. Pai.

Dr. A. Krishna Rao, Dean of Kasturba Medical College said that the Medical Research Centre would include a library, central audio visual unit, a department of experimental medicine and surgery and a department of medical education.

Europeans and Maratha historiography

Dr. A.R. Kulkarni, Chairman, Indian Council of Historical Research while speaking at the SNDT Women's Universitiy campus on Maratha Historiography said that the European historians of the Marathas had played a prominent role. He discussed at length the contribution of Robert Orme, Sprangler, Scot Waring Elphinston, Grant Duff and Kincald Parsnis. He discussed the source material used by them for writing their books and also provided an insight into their methodology. Dr. G. M. Moraes referred to his contribution and his students to the Maratha Historiography. He mentioned that he has himself written a series of articles on the Maratha-Portuguese Relation. He has guided students like late Dr. Y. N. Deodhar for writing his thesis on Nana Phadnis, Dr. V. G. Hatalkar for the Maratha-French Relations, the late Mr. Sudha Desai for the Social History of Maharashtra and late Dr. Gaikwad for his thesis on Raghunath Rao. The meeting was presided over by Dr. P. M. Joshi.

Agricultural Engineering faculty likely for APAU

The Andhra Pradesh Agricultural University is considering a proposal to institute a faculty of agricultural engineering. A study team has already been appointed to go into the matter and on receipt of a report of this committee a decision will be taken after considering the problem in all its aspects.

Classified Advts

Continued from page 258

apply for more than one post must send their separate application for each post. Candidates will be called for interview at their own expense. Incomplete applications shall be rejected without making any reference.

Persons who have already applied in response to University Advt. Nos. 9/78, 1/79, 6/79, 7/79 and 10/79 need not apply afresh (except for the post of Professor of Business Administration and Reader in Psychology). They should intimate to the University that they are still desirous to be considered for the post applied for on the basis of their earlier application sent in response to the aforesaid advertisements. They may also send the particulars of their additional qualifications and experience etc. acquired and academic work done since then by them on plain paper by 19.5.1980.

The University reserves the right to alter the number of posts in any cadre or subject. Higher start may be given to deserving candidates. Selected candidates are liable to be posted in any unit of the University. The University may consider anyone for appointment as Professor though he may not have applied for the post.

Persons who resorted to unfair means at any examination and were published therefor or were convicted by a court of law for any offence involving moral turpitude, are not eligible to apply. Retired persons also need not apply.

V. D. Qamra
REGISTRAR

Conferences, Seminars & Workshops

May—July 1980

Date	Title	Place	Sponsoring Body
4—25 May	Short term institute for teachers of English	Baroda	M.S. University of Baroda
5—17 May	Geotechnical engineering	Dhanbad	Indian School of Mines
5—19 May	Chemical process optimisation	Bangalore	Indian Inst. of Science
5—24 May	Summer Institute of English language teaching	Lucknow	Central Inst of English and Foreign Languages
5—24 May	Summer institute on pest management in cereals & millets	Hyderabad	AP Agricultural University
5—31 May	Contact course for P.G. certificate in teaching English	Hyderabad	Central Inst. of English and Foreign Languages
6 May—4 Jun	Summer Institute in advanced statistical methodology as applied to animal sciences	New Delhi	Indian Agric. Statistics Research Institute
12 May—10 Jun	Summer institute on forage crops improvement	Anand	Gujarat Agric. University and BA College of Agriculture
16 May—18 May	National Symposium on microchemical techniques	Mysore	University of Mysore
19 May—21 May	Annual workshop of coordinated scheme for micronutrients in soils and plants	Anand	Gujarat Agric. University and BA College of Agriculture
20 May—10 Jun	Summer school in astronomy and astrophysics	Bangalore	Indian Inst. of Science
26 May—6 Jun	Summer institute in English language teaching	Calcutta	Calcutta University
May 1980	Problems in second language teaching & the prospects of Hindi	Hyderabad	Dakshina Bharat Hindi Prachar Sabha
May 1980	Symposium on computers & their control	Lucknow	Inst of Electronics and Telecomm. Engineers
2 Jun—6 Jun	Marketing of handicrafts	Delhi	Nat. Prod. Council
2 Jun—14 Jun	Mine environmental engineering	Dhanbad	Indian School of Mines
2 Jun—22 Jun	Course on project implementation	Delhi	I.I.T.
2 Jun—30 Jun	Summer Institute in ecology for better environment	Varanasi	Banaras Hindu University
4 Jun—10 Jun	Production management	Bangalore	Nat. Prod. Council
9 Jun—14 Jun	Quantitative techniques (Operations Research)	Srinagar	Nat. Prod. Council
9 Jun—14 Jun	Telemetry and telecommunication in mines	Dhanbad	Indian School of Mines
12 Jun—3 Jul	Summer Institute in molecular inorganic chemistry	Bangalore	Indian Inst of Science
12 Jun—28 Jun	Sound transmission in Coastal seas	Bangalore	Indian Inst of Science
17 Jun—21 Jun	Corporate planning	Mussoorie	Nat. Productivity Council
20 Jun—24 Jun	Office administration	Ahmedabad	Nat. Productivity Council
23 Jun—27 Jun	Organisational behaviour	Madras	Nat. Productivity Council
23 Jun—5 Jul	Mine safety engineering	Dhanbad	Indian School of Mines
26 Jun—28 Jun	Heat treatment (engineering)	Pune	Nat. Productivity Council
30 Jun—5 Jul	Why Computer based information systems fail	Bombay	Nat Inst for Training in Industrial Engineering
30 Jun—12 Jul	Drilling engineering	Dhanbad	Indian School of Mines
2 Jul—8 Jul	Materials management	Bangalore	Nat. Productivity Council
4 Jul—19 Jul	Cryogenic techniques I. Liquid Nitrogen.	Bangalore	Indian Inst of Science
4 Jul—19 Jul	Software engineering	Bangalore	Indian Inst. of Science
7 Jul—8 Jul	Farm waste management	Chandigarh	Nat. Productivity Council
8 Jul—12 Jul	Management of Small Scale Industry	Gauhati	Nat. Productivity Council
14 Jul—19 Jul	Financial management for non-financial executives	Madras	Nat. Productivity Council
14 Jul—26 Jul	Surface mining	Dhanbad	Indian school of Mines
14 Jul—2 Aug	Basic reservoir engineering	Dhanbad	Indian School of Mines
15 Jul—19 Jul	Tribology	Calcutta	Nat. Productivity Council
21 Jul—30 Jul	Operations research for managers in mining industry	Dhanbad	Indian School of Mines
22 Jul—26 Jul	Corrosion prevention and control	Ahmedabad	Nat. Productivity Council
22 Jul—26 Jul	Profit maximisation through cost reduction	Ahmedabad	Nat. Productivity Council
23 Jul—26 Jul	Marketing information system for engineering products	Bangalore	Nat. Productivity Council
24 Jul—27 Jul	Mid term symposium on electronics in industry	Chandigarh	Inst of Electronics and Telecomm. Engineers
28 Jul—9 Aug	Intensive course on power electronics	Dhanbad	Indian School of Mines
29 Jul—8 Aug	Quality engineering & management	Calcutta	Nat. Productivity Council
July 1980	Course in Medical virology	Pune	Nat. Institute of Virology
July 1980	Symposium on Electronics in industry	Chandigarh	Inst of Electronics and Telecomm. Engineers

Subject Index

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Agriculture:			
19 May—21 May	Annual workshop of coordinated schemes for micronutrients in soils and plants	Anand	Gujarat Agric. University
7 Jul—8 Jul	Farm waste management	Chandigarh	Nat. Productivity Council
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12 May—10 Jun	Summer institute on forage crops improvement	Anand	Gujarat Agric. University and BA College of Agriculture
Computers:			
May 1980	Symposium on computers & their control	Lucknow	Inst of Electronics and Telecomm. Engineers
30 Jun— 5 Jul	Why computer based information systems fail	Bombay	Nat. Inst. for Training in Industrial Engineering
Ecology & the Environment:			
2 Jun—30 Jun	Summer institute in ecology for better environment	Varanasi	Banaras Hindu University
Electricity and Electronics:			
28 Jul— 9 Aug	Intensive course on power electronics	Dhanbad	Indian School of Mines
24 Jul—27 Jul	Mid term symposium on electronics in industry	Chandigarh	Inst of Electronics and Telecomm. Engineers
July 1980	Symposium on Electronics in industry	Chandigarh	Inst of Electronics and Telecomm. Engineers
Engineering:			
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Language and Literature:			
5 May—31 May	Contract course for PG certificate in teaching English	Hyderabad	Central Inst of English and Foreign Languages
May 1980	Problems in Second language teaching and the prospects of Hindi	Hyderabad	Dakshina Bharat Hindi Prachar Sabha
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Management and Marketing:			
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20 Jun—24 Jun	Office administration	Ahmedabad	Nat. Productivity Council
4 Jun—10 Jan	Production management	Bangalore	Nat. Productivity Council
22 Jul—26 Jul	Profit maximisation through cost reduction	Ahmedabad	Nat. Productivity Council
9 Jun—14 Jun	Quantitative techniques (Operations Research)	Srinagar	Nat. Productivity Council
Materials Management:			
2 Jul— 8 Jul	Materials management	Bangalore	Nat. Productivity Council
Medicine & Public Health:			
July 1980	Course in medical virology	Pune	Nat. Inst. of Virology
Mining:			
2 Jun—14 Jun	Mine environmental engineering	Dhanbad	Indian School of Mines
23 Jun— 5 Jul	Mine safety engineering	Dhanbad	Indian School of Mines
21 Jul—30 Jul	Operations research for managers in mining industry	Dhanbad	Indian School of Mines
14 Jul—26 Jul	Surface mining	Dhanbad	Indian School of Mines
9 Jun—14 Jun	Telemetry and telecommunication in mines	Dhanbad	Indian School of Mines
Public Administration:			
17 Jun—21 Jun	Corporate planning	Mussoorie	Nat. Productivity Council
23 Jun—27 Jun	Organisational behaviour	Madras	Nat. Productivity Council
Science and Technology:			
5 May—19 May	Chemical process optimisation	Bongalore	Indian Inst of Science
4 Jul—19 Jul	Cryogenic techniques I. Liquid nitrogen	Bangolore	Indian Inst of Science
16 May—18 May	National symposium on microchemical techniques	Mysore	University of Mysore
12 Jun—28 Jun	Sound transmission in coastal seas	Bangalore	Indian Inst of Science
6 May— 4 Jun	Summer institute in advanced statistical methodology as applied to animal sciences	New Delhi	Indian Agric. Statistics Research Institute
12 Jun— 3 Jul	Summer Institute in molecular inorganic chemistry	Bangalore	Indian Inst. of Science
Space Research:			
20 May—10 Jun	Summer school in astronomy and astrophysics	Bangalore	Indian Inst of Science

Further details can be had from :
The Librarian, British Council Library
AIEACS Building, Rafi Marg, New Delhi-110001

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCE

Psychology

1. Bandyopadhyay Tapen. High achievers: Their psychology and environment. University of Calcutta.

Sociology

1. Singh, Ram Sagar. Rural leadership entrepreneurship and social change : A sociological study of Bilariaganj block in Azamgarh district. Jawaharlal Nehru University.

Political Science

1. Chaudhuri Sailendranath. A study of socio-psychological factors influencing chronic industrial absenteeism. University of Calcutta.

2. Pandey Keshavdas. Emergence of Bangladesh and its impact on mutual relations between China, the U.S.A. and India. Jiwaji University.

Economics

1. Mathur Badri Prasad. Economic development of Shivpuri district of Gwalior division: A case study of a backward region. Jiwaji University.

2. Ramarao, Gazula Dasaradha. Agricultural labourers in Andhra Pradesh : An analysis of wages and employment. Andhra University.

Law

1. Jain Subhash Chander. Expropriation of alien property and the problem of compensation. Jawaharlal Nehru University.

Education

1. Sarma Ajit Kumar. A critical study of the achievement in mathematics by pupils of secondary schools with particular reference to the state of Assam. Gauhati University.

2. Singh Rajendra Pal. A study of creativity in relation to adjustment frustration and level of aspiration. Agra University.

Commerce

1. Ray Malay Kanti. Decision oriented accounting model for an organisation having open system characteristics. University of Calcutta.

2. Singh Jagdish Dayal. Marketing planning: A comparative study of public and private sectors in India. University of Delhi.

3. Vaish, Prakash Narain. Management of working capital in cotton textile industry of M.P. Jiwaji University.

HUMANITIES

Philosophy

1. Chattopadhyay Gangasankar. Ends and means. University of Calcutta.

2. Goswami Krishna. Concept of the individual self (Jivatman) in Nyaya Philosophy. University of Calcutta.

3. Koves Margit. A comparative study of the Suvaranaprabhasa in Turkish and Tibetan versions. University of Delhi.

Linguistics

1. Bhasin Sharda. A contrastive study of Hindi and Japanese word phonology. University of Delhi.

Literature

English

1. Prem Nath. A study of Dr. Johnson: The artists in the light of his own critical principles. University of Delhi.

2. Singh Shyam Narain. Pattern of tragedy in the novels. Magadh University.

Sanskrit

1. Agrawal Krishna Mohan. Indian culture as depicted in the Kadambari of Bana. *D. Litt.* Magadh University.

2. Das Ananta Charan. Studies in the Sulochana Madhava mahakavyam. Utkal University.

3. Ouseparampil, J.M. Gender in Sanskrit : A philosophical study in comparison with other Indo-European languages. Sri Venkateswara University.

4. Samajder Madhabi. An introduction to the study of Samkhya. University of Calcutta.

5. Shanno Devi. Vopdeva ka Sanskrit vyakarana ko yogdan. University of Delhi.

Hindi

1. Dubey Nira. Ashtchap ke kaviyon mein sangitatmakta. Jiwaji University.

2. Govila Vimla. Bhaktikalin Ram kavya mein abhivyanjana shilp. University of Jammu.

3. Gupta Mridula. Tulsi kavya mein loktatwa. University of Delhi.

4. Jain Hem Chand. Swatantryottar Hindi upanyason mein nayak kee sthiti, 1947 to 1975. University of Delhi.

5. Ramakrishna Naicar, Kamadi Bala. Dharmaveer Bharti kee kritiyon mein manavatavad. Andhra University.

6. Sharma, Haricharan. Dushyant Kumar aur unka sahitya. Jiwaji University.

7. Tiwary, Ramnath. Adhunik Hind ikavya mein Ramkatha. University of Calcutta.

Urdu

1. Khan, Anwar Ahmed. Khushi Mohammad Naazir aur Kashmir mein Urdu shairika irtiqa. University of Delhi.

2. Taqi, Yousuf R. Different trends in Urdu nazm. University of Calcutta.

Persian

1. Nasrin Jahan. A study of pro-Mughal histories written in Persian prose in India. University of Calcutta.

Bengali

1. Chattopadhyay, Ramram. Adhunik Bangla kabitar sabda-o-alankar. University of Calcutta.

2. Sarkar, Ajayondranath. Unish satakor samaj sanskar andalan-o-vitarka sahitya. University of Calcutta.

Telugu

1. Bapi Reddy, N. A critique on prabhavathi pradyumnamu. Nagarjuna University.

2. Lakshipathi Rao, Vakkalanka. Paarijaathapaharana prabandha sowndarya samiksha. Andhra University.

3. Ramanadham, Chinta. Kuchipudi School of Yakshgana: A historical, literary and technical perspective. Andhra University.

Geography

1. Ghosal, Kalpana. Growth and development prospects of cottage industries of Murshidabad district. University of Calcutta.

2. Khan, Dilip Kumar. Agro-industries of the district of Twenty Four Parganas: An analytical study. University of Calcutta.

History

1. Bhattacharyya, Kanailal. Sarasvati: A study in conceptual and iconographical development. University of Calcutta.

2. Mukhopadhyay, Mihirmohan. Sculptures of the Ganga-Jamuna valley, C.A.D. 750-1200. University of Calcutta.

3. Nag, Anita. Influence of Vedanta on Vaishnavism. University of Calcutta.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in AIU Library during April, 1980

EDUCATIONAL PHILOSOPHY

Billerbeck, Wolfgang. "What is the value of the school ". *IUS Magazine on the Democratisation and Reform of Education* (2); 1979: 44-8.

Joshi, Ram. "Research and education: Linkage in universities". *University News* 18(4); 15 Feb 80: 83 4 89.

O'Keeffe Dennis J. "Capitalism and correspondence: A critique of Marxist analysis of education". *Higher Education Review* 12(1); Autumn 79: 40 54.

EDUCATIONAL PSYCHOLOGY

Hoge, Robert D and Luce Sally, "Predicting academic achievement from classroom behaviour". *Review of Educational Research* 49(3); Summer 79: 479 96.

Neumann Yoram. "Predicting faculty job satisfaction in university departments". *Research in Higher Education* 9(3); 1978: 261 75.

EDUCATIONAL SOCIOLOGY

Boudon Raymond. "1970s in France: A period of student retreat". *Higher Education* 8(6) Nov 79: 669-81.

Demaine Jack. "Iqism as ideology and the political economy of education". *Educational Studies* 5(3); Oct 79: 199 215.

"STRUGGLE AGAINST neo-colonialist penetration into the educational system: Report of the International Student Seminar on the contribution of students to the struggle for a democratic education geared toward economic independence and social progress, Togo, 1979". *IUS Magazine on the Democratisation and Reform of Education* (3); 1979: 2-9.

EDUCATIONAL PLANNING

Mathur Gautam. "Active education for manpower development". *Manpower Journal* 15(2); July—Sept 79: 11 24.

Wiseman Charles. "New foundations for planning models". *Journal of Higher Education* (Ohio) 50 (6); Nov—Dec 79: 726 44.

EDUCATIONAL ADMINISTRATION

Baldridge J. Victor. "Impacts on college administration: Management information systems and management by objectives systems". *Research in Higher Education* 10(3); May 79: 263 82.

Griffith John, "why the lessons of Gould must not be forgotten". *Times Higher Education Supplement* (385); 7 Mar 80: 11.

Hoyt Donald P. and Spangler, Ronald K. "Measurement of administrative effectiveness of the academic department head". *Research in Higher Education* 10(4); June 79: 291 303.

Minogue Kenneth. "Privilege, independence and a confused equation". *Times Higher Education Supplement* (385): 7 Mar 80: 11 12.

Rais Ahmed. "University research and national development". *University News* 18(4); 15 Feb 80: 87 8.

Srivastava R.C. "Participation practices and faculty and student satisfaction". *EPA Bulletin* 2(2); July 79: 62 9

Sukumaran Nayar V.K. "Management of research in universities". *University News* 18(4); 15 Feb 80: 85 6.

CURRICULUM

Jolly W.P. and Turner C.W. "Transition from school to University: Some experimental induction programmes for engineering students". *Studies in Higher Education* 4(1); Mar 79: 39 46.

"TEACHING AND research in anthropology in South Indian Universities". *Bulletin:Madras Development Seminar Series* 10(2); Feb 80: 107 13.

TEACHING

Bazdugan Gheorghe. "Pedagogy of technical higher education: Its possibilities and limits". *Higher Education in Europe* 4(4); Oct—Dec 79: 36-9.

Woodbury Rebert L. "Organisational change and the improvement of university teaching". *Studies in Higher Education* 4(2); Oct 79: 255 9.

EDUCATIONAL RESEARCH

Dill David D. and Friedman Charles P. "Analysis of frameworks for research on innovation and change in higher education". *Review of Educational Research* 49(3); Summer 79: 411-35.

EDUCATIONAL TECHNOLOGY

Pronay Nicholas. "Towards independence in learning history: The potential of video cassette technology for curricular innovation". *Studies in Higher Education* 4(1); Mar 79: 27-30.

EVALUATION

Clift J.C. and Imrie B.W. "Design of evaluation for learning". *Higher Education* 9(1); Jan 80: 69 80.

Husen Torsten. "International research venture in retrospect: The I.E.A. Surveys". *Comparative Education Review* 23(3); Oct 79: 371-85.

Murphy Roger J.L. and Adams Robert M. "Some observations on the problems of grading examinations with several components: A reply to P.J. Squire." *Educational Studies* 5(3); Oct 79: 225-30.

ECONOMICS OF EDUCATION

Conger Cathleen A. "Building an accurate financial data base". *New Directions for Higher Education* 7(2); 1979: 67-73.

Datta Bhabatosh. "State support to research in universities". *University News* 18(6); 15 Mar 80: 131-2 134.

Dickmeyer Nathan. "First steps in financial analysis". *New Directions for Higher Education* 7(2); 1979: 41-5.

Foster Edward and Rodgers Jack. "Quality of education and student earnings". *Higher Education* 8(1); Jan 80: 21-37.

Frances, Carol and Stenner, A. Jackson. "Analysing the financial state of colleges and universities". *New Directions for Higher Education* 7(2); 1979: 1-14.

Leff Enrique. "Universities and technological dependence". *IUS Magazine on the Democratistation and Reform of Education* (3); 1979: 27-33.

Minter Johan. "Approach to comparative analysis of the financial condition of independent colleges and universities". *New Directions for Higher Education* 7(2); 1979: 61-6.

"PATTERN OF expenditure and per student cost of degree and diploma courses in engineering and technology in India: Summary" *Manpower Journal* 15(2); July—Sept 79: 1-10.

Sethi J.D. "Coping with new economic order : Third world tasks". *EPA Bulletin* 2(3-4); Oct 79—Jan 80: 68-74.

ADULT EDUCATION

Amrik Singh. "Adult education as liberation". *New Quest* (19); Jan—Feb 80: 21-6.

Chambers M.M. "Obstacles to the implementation of principle of life long education in higher education". *Higher Education in Europe* 4(4); Oct—Dec 79: 11-13.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

Bhandari R.K. "Education in the draft sixth plan: A review". *EPA Bulletin* 2(3-4); Oct 79-Jan 80: 75-84.

Shah A.B. "Priorities in education". *New Quest* (18); Nov—Dec 79: 335-6.

"STRUCTURE AND aims of the GDR's educational system". *World University News* 33(11); 1979: 10-11.

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI

Advertisement No. Aca. III/3/80

Applications are invited for the following posts :

I. SCHOOL OF SOCIAL SCIENCES

Centre for Historical Studies:

1. Professor/Sr. Fellow in Medieval Indian History

Essential Qualifications:

(a) Consistently good academic record with at least a high second class Master's degree in History or an equivalent qualifications from an Indian/Foreign University;

(b) A doctor's degree or published work of an equally high standard; and

(c) About ten year's experience of teaching and/or research.

Area of Specialization : Medieval Indian History

2. Assistant Professor in Medieval Indian History

Essential Qualifications:

(a) Consistently good academic record with at least a high 2nd class Master's degree in History with specialization in Medieval Indian History or its equivalent qualification from an Indian/foreign University; and

(b) A doctor's degree or published work of an equally high standard.

Desirable: Knowledge of Persian languvge.

II SCHOOL OF LANGUAGES:

Centre of Linguistics and English :

3. Assistant Professor of English Language & Literature—(Leave vacancy).

Essentialaqualifications:

(a) Consistently good academic record with at least a high IInd class Master's degree in a relevant discipline or its equivalent qualification from an Indian/foreign University; and

(b) A doctor's degree or published work of an equally high standard.

Area of Specialisation: English Literature (20th Century Novel) and English as a Foreign Language.

Centre of Russian Studies :

4. Assistant Professor in Russian

Essential Qualifications:

(a) Consistently good academic record with at least a high second class Master's degree in Russian or its equivalent qualification from an Indian/foreign University;

(b) A doctor's degree or published work of an equally high standard.

Specialisation required: Russian Language, translation and interpretation.

Desirable: Experience of teaching Russian, translation/interpretation at degree level.

Provided that in the case of Assistant Professors if the Selection Committees are of the View that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

Provided further if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five yeasr of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Centre of German Studies :

5. Technical Assistant : Two (Temporary) **(one reserved for Scheduled caste candidate).**

Essential Qualifications:

(a) Graduation (B.A./B.Sc.)

(b) Diploma or equivalent qualification in any area of Audio-Visual Technology; and

(c) At least one year experience in dealing with audio-visual teaching aids.

Desirable : Proven ability to repair and maintain language laboratory equipment.

Scales of Pay:

1. Professor/Sr. Fellow : Rs. 1500-60-1800-100-2000-125/2-2500.
2. Assistant Professor : Rs. 700-40-1100-50-1600.
3. Technical Assistant : Rs. 425-15-500-EB-15-560-20-700.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies.

Benefits of C.P. Fund-cum-Gratuity /G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

For Technical Assistant:

(i) Age limit 40 years; relaxable by 5 years in respect of candidates belonging to Scheduled Castes & Scheduled Tribes/Ex-Servicemen/Physically handicapped candidates.

(ii) Upto 1% of the vacancies are reserved each for deaf, blind and orthopaedically handicapped, in Group C & D (class III & IV posts).

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope (affixing Postage Stamps worth Rs. 2.85) of 23 cm x 10 cm. size to the Deputy Registrar (Academic), Jawajarlal Nehru University, New Mahrauli Road, New Delhi-67, should reach him latest by **2nd June**, 1980.

candidates from abroad, applying for the faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their name, date and place of birth, marital status, nationality; state of domicile; postal and permanent address; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language (s) known; details of visits to foreign countryies; and the names and addresses of a tleast two persons well acquainted with the candidates' professional work who should also be requested by the candidate to forward to the Deputy Registrar (Aca demic) confidential report concerning the candidate.

UTKAL UNIVERSITY

Advertisement No Estt I/926-C/8054/80, Dated 21-4-80

Applications in Seven Copies are invited in the prescribed form alongwith attested copies of certificates and marklists of all examinations passed for the post of Professor of Institutional Finance in the P.G. Department of Analytical and Applied Economics of the University on or before 15-5-80.

P.G. Department : Analytical and Applied Economics

Post : Professor-I (Temporary)

Scale of Pay:

Professor : Rs. 1500-60-1800-100-2000-125/2-2500/- Higher initial salary can be given in case of highly suitable candidates.

Age of Superannuation : 60 years.

Essential Qualifications:

Professor: The Professor shall :

(i) be a Scholar of eminence.

(ii) Possess a good academic record with First or High Second Class Master's Degree in Economics. In cases of other suitably qualified candidates, the High Second class at M.A. may not be insisted upon;

(iii) have a Doctorate Degree of published work of equivalent Standard;

(iv) have independent published research work of high standard in addition to the published work mentioned in (iii) above.

(v) be engaged in active research and have experience of successful supervision of doctoral research in Institutional Finance.

(vi) be teacher for ten years out of which at least seven years should have been spent in regular teaching in Post-graduate/Honours classes.

Desirable, preference will be given to one who has specialisation in Institional Finance, Published some research work of high standard in the field and experience in guiding research work in the subject, Institutional Finance

Prescribed application forms can be had from the Registrar, Utkal University person on payment of Rs. 7.49 including local sales tax (Rupees Seven and paise fortynine) only or by post on receipt of a Crossed Indian Postal Order for Rs 9/-. (Rupees nine) only payable to the Registrar, Utkal University, Vani Vihar, Bhubaneswar-4.

Candidates in Govt. service, if selected for the posts for which they have applied would be asked to pay Pension contribution and leave salary in case they join the University Service on foreign service terms and conditions.

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Advertisement No. 11/80

Applications are invited for three posts of Senior Scientific Officer I and two posts of Senior Scientific Officer II in the Department of Aeronautical Engineering, Civil Engineering, Physics and Central NMR Facility of the Institute in the following pay scales :

Senior Scientific Officer I : Rs. 1100-50-1600.

Senior Scientific Officer II : Rs. 700-40-900-EB-40-1100-50-1300.

DEPARTMENT OF AERONAUTICAL ENGINEERING—

Post : Senior Scientific Officer II—one post.

Qualifications: First class B. Tech. degree in Electrical Engineering with specialization in Electronics.

Desirable: M. Tech. degree in Electrical Engineering with specialization in Electronics.

Experience

Essential: Minimum of two years experience in commissioning and maintenance of electrical and electronics systems and design of digital circuits.

Desirable: Background of hardware and software design of computer interfaces. Knowledge of computer programming with special emphasis on BASIC. Exposure to use of mini computers in a real time operating system.

DEPARTMENT OF CIVIL ENGINEERING:

Post : Senior Scientific Officer I—one post

Qualifications:

Essential: Ph.D. degree in Geology with five years of experience in an educational institution. The selected candidate is expected to assist in research programmes in the Department of Civil Engineering in Engineering Geology, Ground Water and other related areas.

Desirable: (1) Aquaintance with Techniques like x-ray diffraction and differential thermal analysis.

(2) Research publications.

LASER LABORATORIES, DEPARTMENT OF PHYSICS :

Post : Senior Scientific Officer I—two posts.

Qualifications: Ph.D. in Physics plus three years experience in Lasers.

OR

M. Tech. in Electrical Engineering plus four years experience in Lasers. Additional experience in thin films and vacuum coating or in crystal growth or in scientific instrumentation is desirable.

CENTRAL NMR FACILITY (FOURIER TRANSFORM NMR LABORATORY)

Post : Senior Scientific Officer II—one post.

Qualifications : Candidates must have at least B.E./B. Tech. degree in Electrical Engineering with specialization in Electronics.

Preference will be given to candidates with experience in the maintenance and operation of FT-NMR spectrometer systems and also familiar with electronics and computer hardware and software associated with NMR systems.

The posts are contractual for a period of three years initially, extendable by a further three years at the end of which the candidate is eligible for consideration to a permanent post, and carry benefits in the shape of CPF Scheme. Besides pay, the posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Govt. employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

In the category of Scientific Officer II, one post will be reserved for SC/ST candidates. In the event of non-availability of SC/ST candidates, the reserved post would be treated as deserved.

Applications from persons in India should be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a Self-addressed unstamped envelope of 25 cm x 10 cm size. Applications should be accompanied by a Postal order of Rs 7.50 (Rs. 1.87 for SC/ST candidates).

Persons from abroad may apply on plain paper along with a complete biodata and names of three referees from whom reference letters may be obtained.

Applicants who are employed in a Government/Semi Government organisation or Institute, should send their applications through proper channel, else they will be required to produce a 'No Objection' certificate from their employers at the time of interview.

Applications should reach the Registrar, Indian Institute of Technology IIT Post Office, Kanpur-208016 (U.P.) India on or **before May 24, 1980.**

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P.O. MOHANPUR, WEST BENGAL

Corrigenda in Respect of Advertisement No. Apptt/3/80

(i) Category 'A' should be read as Reader in Agronomy (two posts-one against a lien vacancy) instead of Reader in Agronomy (two posts)

(ii) Category 'D' should be read as Lecturer in Agril. Statistics/Genetics & Plant Breeding/Agril. Engineering (one post each) instead of Lecturer in Agronomy/ Genetics & Plant Breeding/Agril. Engineering (one post each).

(iii) For category 'E' administrative experience including office management and supervision of staff is desired.

(iv) For category 'B', 'D', 'G', 'H', & 'I'—if a candidate possessing Doctorate Degree or equivalent research work is not available of is not considered suitable, the person possessing consistently good academic record may be considered for appointment, on the condition that he/she will have to attain a Doctorate Degree or show evidence of research work of equivalent high standard within 5 years of his/her appointment failing which he/she will not be eligible to earn increments till he/she fulfils these requirements.

A.K. Mitra

REGISTRAR (Actg.)

OSMANIA UNIVERSITY

HYDERABAD—50 0007, (A.P.)

Advertisement No. 4/ 80

Applications, in the prescribed form together with the registration fee of Rs. 5/- through M.O./I.P.O./Challan 'A' are invited for the following posts in the University service, so as to reach the undersigned on or before **10th May,** 1980.

1. Professor of Econometrics
2. Professor of Education

Scale of pay : Rs. 1500-60-1800-2000-125/2-2500.

3. Lecturers in Commerce
(lien vacancies)
4. Lecturers in Telugu

Scale of pay: Rs. 700-40-1100-50-1600.

5. Research Assistant
Consolidated salary of Rs. 400 -p.m.

Age:
Professors —Not above (50) years
Lecturers —Not above (35) years
Research Asst. —Not above (30) years

Note :
(1) Age limit does not apply to the employees of this University.
(2) Relaxation in age to the extent of five years may be granted to candidates belonging to SCs, Sts and BCs, respectively in the case of Lecturers only.
(3) Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for SCs, STs, and BCs respecively in case of Lecturers only.

Application forms can be had from the Director, Dept. of Publications and University Press, Osmania University, Hyderabad-7, A.P., on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self-addressed envelope (11 ½ x 26 ½ cms) duly stamped for ordinary or registered post.

A latest passort size photograph should be affixed on the application form. **No original certificates should be enclosed to the application form.**

Full particulars can be obtained on requisition from the Director, Osmania University Press, **free of cost**, by sending a self-addressed stamped envelope.

B. Ramachandra Reddy
REGISTRAR

OSMANIA UNIVERSITY

HYDERABAD-500 007, (A P.)

Advertisement No. 6/80

Applications in the prescribed form together with the registration fee of Rs. 5/- through M.O./I.P.O./Challan 'A' are invited for the following posts in the University service, so as to reach the undersigned on or before **19th May, 1980.**

I. Readers in Arabic / English / Kannada / Linguistics / Islamic Studies / Marathi / Telugu/Tamil/ Astronomy / Botany / Chemistry/ Physics/Bio-Chemistry / Zoology/ Economics/History.
II. Readers in Civil Engineering / Mechanical Engineering/ Electronics & Communication Engineering.
III. Readers in Technology.
IV. Readers in Education.
V. Lecturers in Chemistry/History.
VI. Reader in Physics—Godavari Khani
VII. Readers in Chemistry—Bhiknur
VIII. Readers in Geology—Kothagudem (P.G. Courses at District Centres.)
IX. Reader in Chemistry—Kothagudem School of Mines, Kothagudem.

Scale of Pay:
Readers—Rs. 1200-50-1300-60-1900
Lecturers—Rs. 700-40-1100-50-1600
Age: Readers—Not above (40) years.
Lecturers—Not above (35) years.

Note:
i) Age limit does not apply to the employees of this University.
ii) Age relaxation can be considered in deserving cases.

Application forms can be had from the Director, Department of Publications and University Press, Osmania University, Hyderabad-500 007, A.P. on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self-addressed envelope (11½ x 26½ cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be affixed on the application form. No original certificates should be enclosed to the application form.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramachandra Reddy
REGISTRAR

TULJARAM CHATURCHAND COLLEGE

BARAMATI-413 102
P. B. No. 51, DIST. PUNE
(Affiliated to Poona University)
Advertisement

Applications are invited for the following posts in this College, in the prescribed form obtainable from this College on payment of Rs. 2/- and a self addressed stamped (30 Ps) envelope (9″ x 4″). Amount of Rs. 2/- may be remitted by Indian Postal Order or by M.O. or in cash. The prescribed application form duly filled in should reach in this office on or before 15-5-1980.

FUL-TIME LECTURERS in English, Botany, Commerce, Economics, Politics, History, Chemistry-(Organic ond Inorganic), Geography, Psychology, Statistics, PART-TIME LECTURER in Accountancy.

For Politics, Commerce, English, Hindi, History, Accountacy, Economics candidates recognised or recognisable to teach Post-Graduate Classes will be preferred.

Qualifications

First or High Second Class or B (B plus) grade at Master's Degree and M.Phil or Ph.D.

Pay Scale: Rs. 700-40-1100-50-1600.

BHOPAL UNIVERSITY

BHOPAL

CORRIGENDUM
No. 2039/Estt./BU/80
Dated 19-4-1980

In this University advertisement No. 3/80 relating to the post of Deputy Registrar (Development) the minimum of the scale of pay may be read as Rs. 700/- instead of Rs. 750/-.

M. G. Paithankar
REGISTRAR

UNIVERSITY OF RAJASTHAN

JAIPUR

Advertisement No. 9/80

APPLICATIONS are invited (through proper channel in case of those who are already in employment) so as to reach this office on or before Monday the 19th may, 1980 in the prescribed form available from the Registrar's office on pre-payment of Rs. 4/- (Rs. 3/- extra in case required by post) for the undermentioned posts (including the posts in the Institute of Correspondence Studies and Continuing Education:—

1. **Professors**: In the scale of Rs. 1500-60-1800-100-2000-125/2-2500. Tagore Professor in History and Indian Culture—1; Professor in History—1; Public Administration—1; Physical Chemistry—1; Mathematics—1; Jain Studies—1 and Business Administration—1.
2. **Readers**: In the scale of Rs. 1200-50-1300-60-1900. Law—1; Public Administration — 1; Political Science—1; Psychology—1; Sociology—2; Dramatics—1 and Economics—1.
(The above posts of Readers include one post each in the subjects of Economics, Public Administration & Sociology for the Institute of Correspondence Studies and Continuing Education and the same are temporary but likely to be made permanent).
3. **Lecturers**: In the scale of Rs. 700-40-1100-50-1600. Economics—5; History—6; Public Administration —2; Dramatics—3; South Asia Studies Centre—1; Zoology—2 and Business Administration—7.
(The above posts of Lecturers are inclusive of the vacancies in the Institute of Correspondence Studies & Continuing Education. They are Economics—3; History—2; Public Administration—2 and Business Administration—5 and the same are temporary but likely to be made permanent).
4. **Case Analyst**—1 in the scale of Rs. 400-40-800-50-950.
5. **Research Associates**: In the grade of Rs. 700-40-900-EB-40-1100-50-1300. Economics—1; History—3; Sociology—1 and South Asia Studies Centre—2.
6. **For University Leadership Project in Political Science**:—(Temporary but likely to be made permanent):-
i) Reader—1 in the grade of Rs. 1200-50-1300-60-1900.
ii) Lecturer (Translation)—1 in the grade of Rs. 700-40-1100-50-1600.
7. For University Service and Instrumentation Centre (Temporary but likely to be made permanent):—
i) Senior Scientific Offices—1 in the grade of Rs. 1100-50-1600.
ii) Scientific Offices—2 in the grade of Rs. 700-40-900-EB-40-1100-50-1300.

The details of qualifications etc. may be obtained along with the prescribed application form or separately as the candidate may desire. The benefits of Provident Fund, D.A. and other allowances will be admissible as per rules of the University. Candidates desiring to

(*Continued on page 251*)

SAMBALPUR UNIVERSITY

JYOTI VIHAR, BURLA
SAMBALPUR
Pin. : 768017
Advertisement No. 5732 Estt-II
Dated 28-4-80

Applications, alongwith attested copies of marksheets and Certificates of all examinations passed in the prescribed from are invited for appointment of Principal in University College of Engineering, Burla.

I. **Scale of pay** : Rs. 1500-60-1800-100-2000-125/2-2500 -
II. The post carries usual Dearness Allowance and C.P.F.—cum-gratuity benefit as would be determined by the University from time to time.
III. The age of retirement is 60 years.
IV. **Qualification**:
(1) A First Class Master's Degree/Doctorate Degree in Civil/Mech./Electrical/Electronics & Telecommunication Engg. with a minimum of 10 years experience in teaching and/or research out of which at least 5 years shall be teaching in an Engineering College/University.
(2) Experience in guiding Research.
(3) Professional/Scientific work of outstanding merit will be preferred.

In addition to the above, the candidate should have administrative experience of some years to give proper administrative guidance to the College.

Seven copies of the application forms will be supplied from the University office to each candidate in person on cash payment of Rs. 15/- (Rupees fifteen) only. Candidates intending to receive forms by post are required to send(a) crossed Postal Order of Rs. 15/- payable to the 'FINANCE OFFICER, SAMBALPUR UNIVERSITY'. (b) a self addressed envelope (23 cm x 10 cm.) with postage stamps worth Rs. 3.30 p. affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money Order/Cheque will not be accepted.

The last date for receipt of applications in the office of the University is **Dt. 15-5-1980.** The candidates will be required to appear for an interview before a Selection Committee at their own expense.

Issue of this advertisement does not make it binding on the University to make the appointment.

All communications should be addressed to the Registrar by designation only.

J.N. Panda
REGISTRAR

SHREEMATI NATHIBAI DAMODAR THACKERSEY WOMEN'S UNIVERSITY

BOMBAY-400 020

Applications are invited on prescribed forms available from the University Office on payment of Rs. 5 - (by M.O. or cash) for the following posts to be filled in at the Sir Vithaldas Thackersey College of Home Science, located at Juhu Campus of the University, so as to reach the undersigned before **May 21, 1980.** The medium of teaching is English.

I. **Post-Graduate Department**
   1. PROFFESSOR in Child Development: One Post
   2. READER in Foods & Nutrition : One Post
II. **College level**
   LECTURERS in Textiles & Clothing ; Four posts

Qualifications

Professor: An eminent Scholar with published work of high quality, actively engaged in research—ten years experience of teaching and/or research in Child Development-experience of guiding research at doctoral level.

OR

An out-standing scholar with established reputation who has made significant contribution to knowledge in the above specialisation.

Reader: Good academic record at Bachelors and Master's level in Foods & Nutrition, at least with first or high second class with a doctoral degree or equivalent published work in the subject. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials. 5 years experience and/or research provided that at least 3 of these years were as lecturer or in an equivalent position. The condition may be relaxed in the case of candidates with outstanding research work.

Lecturers:

(a) Consistently good academic record with at least first or high second class at the Master's level in the subject concerned or an equivalent degree of a foreign University; and

(b) An M. Phil. Degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research work.

Note:

(1) Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his/her published work is of very high standard, it may relax any of the qualifications prescribed in (a) above.

(2) Provided further that if a candidate possessing the qualifications at (a) above is not available or not considered suitable the college, on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that he/she will have to obtain an M. Phil. Degree or a recognised degree beyond the Master's level with five years of his/her appointment, failing which he/she will not be able to earn future increment until he/she obtains that degree or gives evidence of equivalent published work of high standard.

Salary Scales:

Professor: Rs. 1500-60-1800-100-2000-125/2-250 + admissible allowances. (Total initial emoluments about Rs. 2100/- p.m.)

Reader: Rs. 1200-50-1300-60-1900 + admissible allowances (Total initial emoluments about Rs. 1800/- p.m.)

Lecturer: Rs. 700-40-10-1100-50-1300-Assessment-50-1600 + admissible allowances (Total initial emoluments about Rs. 1175 p.m.)

Note:

(a) Only suitable candidates will be called for interview.

(b) Other things being equal preference will be given to candidates from Scheduled Castes/Scheduled Tribes/Other Backward Communities.

(c) Higher starting salary may be considered in exceptional cases.

(d) Work specifications of Posts 1 and 2 be collected with the application forms.

(Smt.) Kamalini H. Bhansali
REGISTRAR

AMERICAN STUDIES RESEARCH CENTRE

HYDERABAD
requires

ASSISTANT LIBRARIAN

Salary in the pay scale Rs. 1,100-50-1,600 and allowances as per Central Government.

Minimum of Master's degree in Library Science plus Master's degree in Humanities or Social Sciences (preferably with a paper in American Literature or History). Fluency in English and ability to write and correspond in English and typing skill are **essential.** Five years experience in academic or research library including two years experience in supervisory or other responsible position.

Knowledge of reference sources and bibliographic services such as preparation of annotated checklists and catalogs. For Technical Services, a thorough knowledge in Dewey Decimal Classification and Anglo-American Cataloging Rules and experience in cataloging is essential.

Should be able to determine work priorities, assign duties/projects and supervision of staff.

Candidates who have applied in response to our ad. in September 1978 need not apply.

Application on plain paper should reach the Director, American Studies Research Centre, Hyderabad 500007, not later than **12 May 1980.**

Candidates called for interview will be paid 1st class roundtrip trainfare.

Fiscal & Administrative Officer

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

ANSARI NAGAR, NEW DELHI-110016

Advertisement No. 2/80-Estt. I

Applications will be received by the Director, All India Institute of Medical Sciences, Ansari Nagar, New Delhi from the Indian citizens upto the **16th May, 1980** for the post of Associate Professor of Ophthalmology for Dr. Rajendra Prasad Centre for Ophthalmic Sciences on the prescribed forms available on request.

Upper Age Limit : 50 years relaxable for Government servants, Schedule Castes and Scheduled Tribes candidates or otherwise exceptionally qualified candidates. Upper age limit upto 5 years is relaxable in the case of Schedule Castes and Scheduled Tribes candidates.

Application forms and detailed information sheet can be obtained personally or on written requests accompanied by a self addressed stamped (0.50 paise) envelope (23 × 8 c.m.)

THE UNIVERSITY OF BURDWAN RAJBATI BURDWAN

WEST BENGAL

Advertisement No. 15/79-80
Dated, 8th April, 1980

Applications in the prescribed form are invited for the following posts in the approved scales of pay (viz. Reader-Rs. 1200-50-1300-60-1900/- and Lecturer—Rs. 700-40-1100-50-1600/-) with allowances and other benefits according to University Rules. The monthly honorarium for Part-time Lecturer is Rs. 150/- plus T.A. according to rules.

A. **Department of Mathematics**
Lecturer: One post (lien bound but likely to be permanent)

B. **Department of Sanskrit**
Reader : One post

C. **Department of English**
Lecturer : One post

D. **Department of Physics**
- (i) Lecturer : One post (Temporary)
- (ii) Lecturer : One post (lien bound but likely to be permanent)

E. **Department of Political Science**
Lecturer : One post (lien bound but likely to be permanent)

F. **Department of Commerce** : (for Post-graduate Diploma Course in Industrial Laws and Personnel Management)
Part-time Lecturer : One post.

Minimum Qualifications:

(a) A doctor's degree or published research work of an equally high standard, and

(b) Consistently good academic record with first or high Second Class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University.

Desirable Qualifications : Specialisation OR Proficiency :

For A : Algebra or Topology or Geometry or Analysis.

For B : Any branch of the subject.

For C : Linguistics/Stylistics/E. L. T. qualifications.

For D (i) : Experimental Nuclear Physics.

For D (ii) : M.Sc. in Physics with Radio Physics & Electronics or M. Tech. Radio Physics & Electronics. The candidate should also have the specialisation in communication systems/Non-linear Oscillations.

N.B. This was previously advertised vide No 12/79-80. Those who applied earlier need not apply again

For E : Government and Administration of South Asian Countries.

For F : Candidate must have a post-graduate degree in Commerce or Business Management or Economics and also degree in Law. Preference will be given to a holder of Master's degree in Law. Candidate must be conversant with Labour Laws.

Experience :

Candidate should be a practising Lawyer in Labour Courts of at least 5 year's standing. Preference will be given to one having experience in teaching Labour Laws in a University or a recognised Institute of higher learning. Candidate selected will be required to deliver a minimum of three lectures per week.

The University Council may on recommendations of the appropriate Selection Committee, waive any of the requirements in view of the candidate's specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40 p.) envelope (9" x 4").

Last date for submission of applications with requisite fee of Rs. 5/- is **May 10, 1980.**

A.K. Chaudhuri
REGISTRAR

UNIVERSITY OF JABALPUR

JABALPUR

Advertisement No. Estt./80/127
Dt. 2nd April, 1980

Applications are invited on the plain paper for the following posts, viz. :—

1. **Reader** : One for Philosophy in the scale of pay of Rs. 1200-50-1300-60-1900.
2. **Lecturer** : One for Sociology in the scale of pay of Rs. 700-40-1100-50-1600.

Essential Minimum Qualifications :
For Reader:

(a) (i): A Doctor's degree or published work of an equivalent high standard; and

(b) (i): A 2nd Class Master's degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent degree of a foreign University; and

N.B. While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded.
(ii) Atleast 50% marks at the Bachelor's degree examination, the basis of which division is awarded at the degree level by the University; and
(iii) Atleast 50% marks at the Higher Secondary/Intermediate/Pre-University Examinations, as the case may be;

AND

(c) (i): The experience of teaching of post-graduate classes shall be atleast 5 years.
(ii) : Atleast three years experience guiding research.

For Lecturer:

(a) (i): A Doctor's Degree or published research work of an equivalent high standard; and

(b) (i): A 2nd Class Master's degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent Degree of a foreign University; and

N.B. : (While taking into account the marks/grade, the marks/grade, obtained in internal assessment, if any, shall be excluded).
(ii): Atleast 50% marks at the Bachelor s Degree examination on the basis of which division is awarded at the Degree level by the University, and
(iii): Atleast 50% marks at the Higher Secondary Intermediate/ Pre-University Examination, as the case may be.

Having regard to the need for developing inter-disciplinary programmes, the degree in (a) and (b) (i) above may be in relevant subjects.

N.B. : 1. The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of scheduled caste/ scheduled Tribe candidates.
2. The posts are temporary for the present.

Qualifications are relaxable in cases of candidates of exceptional merit, Names of eminent persons distinguished in scholarships who do not apply may also be considered for selection. The candidates in their applications should give details of their 'Specialization' if any. Canvassing in any form or on behalf of the candidates will be treated as disqualification.

The applications showing the details of qualifications stated above along with the information regarding the proof of date of birth and past experience accompanied with true copies of testimonials and Postal Order for Rs. 10/- in the name of the undersigned should reach here not later than **15th May, 1980.** The candidates already in employment at present should send their applications through proper channel.

R. N. Tripathi
REGISTRAR

SAURASHRTA UNIVERSITY

RAJKOT

CORRIGENDUM

"Reference advertisement dated 15 April '80 issue on page No. 223. For the post of Professor-in-charge (English Language Cell) applications of persons upto 65 years of age will also be considered."

REGISTRAR

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2145

University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH MAY 15, 1980

13 JUN 1980
C.F.T.R.I., MYSORE

Dr. O. P. Gautam, Director-General, Indian Council of Agricultural Research, delivering the Convocation Address at the University of Agricultural Sciences, Bangalore.

ASSOCIATION OF INDIAN UNIVERSITIES PUBLICATION

A.I.U. PUBLICATIONS

		(Rs.)
1.	Universities Handbook—1979	150.00
2.	Handbook of Medical Education—1980	12.00
3.	Association of Indian Universities—History	50.00
4.	Higher Education and Development	30 00
5.	University Finance—A statistical profile	50.00
6.	Enrolment in Higher Education—A trend analysis	20.00
7.	Resource Allocation on Education—Research Studies	20.00
8.	Research in Economics of Education—India	10.00
9.	Institutional Costs of University Education	40.00

Bibliography of Doctoral Dissertations

10.	Social Sciences	1857-1970	50.00
11.	Humanities	1857-1970	100.00
12.	Physical Sciences	1857-1970	125.00
13.	Biological Sciences	1857-1970	100.00

Note : Also available in paperbacks in individual discipline

14.	Social Sciences & Humanities—1970-75	150.00
15.	Physical Sciences—1970-75	120.00
16.	Biological Sciences—1970-75	In Press
17.	Social Sciences & Humanities—1975-76	50.00
18.	Natural & Applied Sciences—1975-76	90.00
19.	Social Sciences & Humanities—1976-77	70.00
20.	Natural & Applied Sciences—1976-77	120.00
21.	Social Sciences & Humanities 1977-78	90 00
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23.	Management of Examinations	35.00
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	Undergraduate Level				
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42.	Botany	20.00	50.	Foods & Nutrition	25 00
43.	History	15.00	51.	Sociology	30 00
44.	Geography	15.00	52.	English Lang. and Litt.	18.00
	Postgraduate Level		53.	Physiology	30.00
45.	Mathematics	60.00			

Address enquiries to

Association of Indian Universities

Rouse Avenue, New Delhi-110002

UNIVERSITY NEWS

Vol. XVIII MAY 15

No. 10 1980

A Fortnightly Chronicle of Higher Education Price 80 Paise

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Editor : ANJNI KUMAR

Olympics in the Political Mist

13 JUN 1980
C.F.T.R.I., MYSORE

G. S. Sivia*

The glorious and rich tradition-ridden Olympics have once again been caught up in a rough weather. A high level political drama is jeopardising the fate of its programmes in Moscow. An introspection into the genesis of the Olympic Movement shows beyond doubt that it is a symbol of love, affection, fraternity and brotherhood. Achievements in these Games are pursuits of spiritual satisfaction, happiness, glory, beauty and strength. The ancient Greeks not only cherished these ideals but also worshipped them in reality during the celebrations of the Olympiads. Even though, celebration of the Olympic Games at a periodicity of four years began from 776 B.C. its origin is traced much earlier. The Ancient Olympiads were held uninterruptedly till 394 A.D. at Olympia as a National Festival of gay and glory in honour of the Supreme God 'Zeus'. Involvement in the Olympic Games, therefore, besides being a source of recreative pursuits is also a symbol of spiritual values the only hope of mankind, today, amidst the crazy race of acquiring supremacy in the most sophisticated atomic devices and the lethal weapons. In fact, the pre-historic sports festivals were more spiritual than competitive in essence.

Political Interference

Despite the content of the Olympic schedules is purely of a cultural nature, the dragon of politics has all along been irksome to its smooth and steady progress. It was only through a political decree of the Romans that the ancient Olympics had been abandoned in 394 A.D. Whatever little was left, it was restricted to participation only of the slaves and the animals. The joyful and the healthy competitions amongst the talented athletes were now reduced to fights between the slaves and the animals. This concept of sports of the Roman Rulers brought the Olympic Games to shakles. The Modern Olympics continues to be a victim of political devils. The very first Modern Olympics suffered a political jolt in 1896 at its ancient home town when the Greek Government was reluctant to render the necessary financial assistance. The political situations during the two World Wars had almost swallowed the movement. The result was that the Olympic Games due in 1916, 1940 and 1944 were cancelled. Hitler went to the extent of attempting to use the Berlin Olympics (1936) as an instrument of Nazism. The apartheid question of Rhodesia and South Africa need no details of their adverse effects. The sad events at Melbourne (1956), Mexico (1968), Munich (1972) and Montreal (1976) are too recent to be erased from the memory. The Melbourne situation was almost parallel to what the Moscow Olympic Games are facing today. The Soviet Military intervention in Hungry coupled with the Anglo-French attack on the Swez led to boycotting the Games by several countries. Killing of eleven members of the Israeli Contingent by a group of extremist Palestinias terrified the Games Village at Munich. The atmosphere at Montreal was polluted with a walk-out by African Contingents on the issue of New Zealand's sporting links with South Africa.

Revival

After a gap of fifteen centuries, the French noble, Baron Pierre de Coubertin, breathed a meaningful idea and made ceaseless efforts to revive the Olympics and fill-up the void. With his

(Continued on page 266)

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*Deputy Secretary (Sports) AIU.

The Management Crisis in Education

D. S. Devanesan

Traditional educational management has been dominated by two types of academic administrators. First, there is the benevolent and urbane father-figure who still tries to run his institution like one big happy family though the analogy is wearing thin under the strains and stresses of rapid educational growth and expansion. Then there is the unabashed authoritarian, ever ready to quote rules and regulations with which to browbeat recalcitrant staff or students. He is often hated, sometimes respected but seldom loved but parents who cannot control their own offspring tend to regard him highly.

Both types, however, can lead to a species of the personality cult, the former based on an appreciation for humane and "non-interfering" leadership and the latter on the admiration the weak tend to have for the strong and dictatorial. And, therefore, each type in its own way can be an obstacle, unwittingly perhaps to the development of democratic traditions and practices which are becoming more and more essential for the efficient and meaningful functioning of educational institutions.

A new type of leadership is needed which is neither benevolent nor despotic but productive without being too sentimental about human relations and efficient without being ruthless—a leadership interested in evaluating institutions mainly by performance and the successful achievement of educational goals and objectives.

Inadequacy of Trained Staff

Another cause for the malfunctioning of educational institutions is the inadequacy of a supporting staff trained in administration. The inadequacy can be traced both to financial constraints and to the lack of proper recognition of the need for and the importance of the administrative staff for the proper functioning and management of educational institutions. There is often an unfortunate and artificial distinction made between the academic and administrative personnel when both are equally necessary for the success of the educational enterprise. The description of the administrative personnel, as non-teaching staff" seems to hide a tacit assumption that the academic staff is a superior class within the institution reflected in differing scales of pay and social status. Instead of seeing their roles as complementary often they function as two mutually exclusive and hostile units within the same institution.

Some colleges have been wrecked by conflicts between the Principal and Bursar (where such an administrator exists) and we are all too familiar with the unseemly faction fights in universities where the Registrar and the Finance Officer are at loggerheads or combine to make the Vice-Chancellor ineffective. In other cases an aggressive or politically motivated Vice-Chancellor may himself be responsible for the unhappy infighting and chaos which paralyse the administration. It illustrates the importance of an administrative staff which is not only good in administration but also academically motivated to assist the processes of teaching, learning and research. There is an obvious need for specialised training for administrators in educational institutions and especially for those seconded to universities from Central Government services.

Large-scale training in Management, if it is to be carried out seriously, requires considerable funds and well-qualified and experienced trainers. Then there is the far-flung geographical spread of education with its vast network of institutions coloured and conditioned by all the diversities that characterise this country so that what is relevant in one region may not be so in another. There are also all the difficulties in communicating and implementing policy decisions and other related matters when there is such a wide diffusion of responsibility for education from the Central Government to village panchayats. The wide range and extent of the operation and the complicated processes involved, including delicate human relations, continues to baffle many who are genuinely committed to educational change and reform.

But assuming that the miracle of change does take place and that Headmasters, Principals and Vice-Chancellors do become "appropriately trained modern managers", what is to be expected of them ? As heads of institutions they will still have to provide a highly motivated leadership but now supplemented and enriched by management training and experience. What this involves will have to be gradually understood through the studies of the behavioural scientists till the picture emerges of what makes a good educational manager in the way in which the attributes of a good business executive have been worked out. But we can try to examine some of the functions and roles he may be expected to perform.

The primary task of an efficient manager is to get good results. In the case of an educational manager this does not simply mean good examination results though that is often the sole yardstick applied to him in a poverty stricken and highly competitive society like ours ! The manager-educationist will be trained to obtain the best results through the proper functioning and development of all the human resources within his institution.

Four Major Groups

In any educational institution there are four major groups : the executive and administrative staff, the academic staff (for both teaching and research), the students (who constitute the largest and most important section) and the service staff or Karamcharis. These major groups are again enmeshed in sub-groups like departments, centres for specialised studies the library and the sports field.

Ideally speaking these groups and sub-groups should function as harmoniously interacting parts in an organic unity, a beautifully integrated geometric design as Plato saw it. It also explains the nostalgia that pervades some educational circles for the traditional and ancient institutions embedded in our culture like the gurukulas and ashramas of the hoary past. With the exception of a few Gandhian institutions and some centres of religious and theological training, the reality of our educational systems is that they are closer to the modern factory than to any attractive old cultural model. The unrest, for example, in educational institutions is now more akin to industrial unrest with wages, service conditions and labour problems driving the academic goals and objectives from the centre to the periphery. With the unionisation of the administrative staff, the teaching staff, the students and the non-teaching staff the management of an educational institution has drawn closer to the style of management needed by industry. And the teaching and examination system resembles the production line in any factory except perhaps, that industrial managers are more concerned about quality control for their marketable commodities than their educational counterparts !

If the success of the manager-educationist is to be judged by results then the predetermined objectives and goals of the institution should be clearly defined. These objectives and priorities, to be successful, should be worked out together by all the groups within the educational institutions through an in-built and continuous system of planning and development. Unless there is such democratic participation by the staff neither functions and roles nor meaningful programmes and activities can be designed.

Management by Objectives

Therefore, the manager-educationist will understand Management by Objectives (MBO) and utilise communication skills for enlisting the understanding, enthusiasm and cooperation of his colleagues as active co-workers (not employees !) in the achievement of the goals which the institution has set for itself. The manager-educationist has to be a living embodiment of the goals and objectives breathing a creative spirit into every sphere of the institution. He should be judged by his performance in terms of the objectives of the institution rather than by subjective reactions to his personality alone which is so often the case.

If performance and results are the criteria by which the head of the educational institution is to be judged, then the same should apply in all fairness to all who are involved in its functioning. If every thought, word and deed of the head is under constant appraisal the same should apply to all members of the staff ! A great deal of thought will have to be bestowed upon recruitment and selection procedures so that the initial mistake of appointing non-starters is avoided. The existing hierarchical structures do not make it possible to provide adequate incentives and rapid promotion on the basis of good performance. Lecturers have to stagnate for years as lecturers with no hope of advancement which is most frustrating. It is a system which is self-defeating because it inhibits merit, initiative and enterprise.

In the ultimate analysis change can come only from within. The bold and logical step is to accept the stark fact that the old "university" model has been practically replaced by a "multiversity" in which the right of the four major groups—the administrative staff, the teaching faculty, the students and the service personnel—to form associations of their own which are now recognised in grudging or inadequate legalistic terms should be accepted as a necessary step towards academic change and reform.

Once this right of "unionisation" has been concealed, the functions of the Management will be clearer as the coordinating agency which motivates and inspires all the units to make a planned and concerted effort to fulfil the educational goals and objectives of the institution. These associations will then be regarded as allies in the struggle for radical reform of the educational system rather than as opponents of the Management or obstacles to progress. Such a mutually friendly approach may also help the associations to see that short term objectives like improved service conditions, for example cannot replace the long term objectives of sound educational reform which requires cooperation rather than confrontation with the institutions to which they belong.

The manager-educationist will not only maintain friendly relations with each of these four associations but also help them to build healthy traditions and activities. It is not axiomatic that any of these four associations will function in a democratic or constructive manner. They are as much in need of proper management and organization as the institution itself. Where teacher, student, or karamchari associations are undemocratic, badly led and mismanaged they also contribute to the malaise of Indian education.

Basic Interest

Therefore, the Management has a basic interest in helping them to function properly even providing their leadership with opportunity for training and understanding for their role and that of their association as a means towards the efficient performance of functions contributing to the total welfare of the educational institution to which they belong. Such an understanding of the role of those associations should challenge them to think carefully and responsibly about both their rights and duties.

Teachers militants and radicals, for example, will be faced by the need to define their goals and objectives not just in terms of their own career and service interests (important though they are) but also in terms of what their priorities are for reforming and changing the entire educational system. Teacher association will carry more weight with the general public if they can adopt a holistic approachin which their keenness for educational reform includes and yet transcends their own personal stake and vested interest in the system. Only such a detached and objective stance will give credibility to the campaign of teacher associations against mismanagement and corruption.

Further, the economic problems of teachers cannot be divorced from the wider pressing problems of poverty and injustice and their struggle cannot be isolated from the major battle for a better life for the whole people. While the right of organised protest cannot be denied to teacher associations they do have a special responsibility for trying to avoid methods of confrontation which are likely to create the wrong impression on the young minds entrusted to their care. And it is not simply a negative feeling born from fear of the indiscipline that might result but a concern for what is ultimately good for the entire academic community as the guardian of the culture and civilization of the people.

Another aspect of this "unionisation" trend is the extension of the activities of these associations outside the college walls and university campuses through their affiliation to regional, national (or even international) bodies. In many countries teacher and student associations function on a national scale. The constructive aspect of such developments is that these associations could rise above local and regional considerations by being exposed to thinking on a national scale about the total educational needs of the country.

Intrusion of Party Politics

The danger, however, is that their autonomy as academic associations may be eroded by the intrusion of party politics. The fragmentation of the labour movement through the control of trade unions by political parties may be cited as a parallel. But it has been argued that trade unions have no option but to turn to political parties for support when they fail to obtain redress from managements and governments.

Similar arguments will undoubtedly be used to justify teacher and student involvement in party politics. But such abdication to party control can have far-reaching consequences, destructive of the basic purpose and aim of academic bodies which is a matter for the leadership to ponder over. While political action may sometimes be necessary and inevitable, can the associations function in such a manner that they do not become the tools of unscrupulous politicians or reduce themselves to ashes by allowing themselves to be caught in the cross-fire between political parties ?

The poignant question is : Who is shaping India's destiny in her class rooms ? Are there enough dedicated men and women in the classrooms with the will, the ability and the managerial skills to shape our educational systems in such a way as to make them contribute to the removal of all that hinders the progress of our country as it struggles to fulfil the trust it made with destiny more than three decades ago ? Those who are responsible for shaping our national destiny must have that vision without which the people perish. But the agonising question is : Do they ? [*Courtesy* : *The Hindu*]

Olympics in the Political Mist

(*Continued from page 263*)

enthusiasm and devoted efforts, the dream came true in 1896. He had a conviction that participation in the International Sports Festivals of this kind would uphold its legandary traditions and project the human race above all considerations of caste, creed, religion and territorial barriers. Coubertin's ideals have, no doubt, become a reality and, since its revival in 1896, the Olympics have been regularly held at a frequency of four years except during the first and second World Wars. Yet, the political mist has always been surrounding the Olympic horizon.

Fate at Moscow :

The next Olympics at Moscow are again on the threshold of a political disection. Perhaps the history has taken a direction to repeat itself. The world is sharply divided over Soviet military action in Afghanistan. Never perhaps in the history of the Modern Olympic Movement, world leaders of the stature of Jimmy Carter and Mrs Thatcher joined the issue so seriously. Following a call by Carter Administration for a parallel programme, a chain reaction of a cross-section of views has set in amongst the Western European Governments. One group including Britain, New Zealand and Portugal argues strongly for a boycott. The other group, however, representing Switzerland, Sweden and Luxembourg is opposed to mixing politics with sports. The third group of countries like West Germany and France feels that it was too early to come to a final decision. The Arabian Countries have also supported the move for a boycott. Jimmy Carter's call is gaining momentum. On the other hand, the Soviet group is on the defensive and is condemning the boycott move as an irrelevant issue. The situation is really in a boiling pot and what may emerge ultimately is yet a speculation.

Conclusion

Political interference is nothing new to the Olympic Movement though its style and colour has been varying from the concept of social structure as in the ancient Greeks to severe differences of political ideologies as it is today. In this age, to imagine an important International Event like the Olympic Games absolutely devoid of political considerations when the Life is so closely intervoven into its various political, social, economic and religious aspects is only an abstract thinking like Plato's hypothesis of a Philosopher King; what is important, however, is that the political forces do not overtake the impact and the importance of the Olympic ideals. Sports lovers have unshakable faith and confidence that the sad situation will blow over and world political leaders will re-concile to a situation of mutual understanding at least for the period of Moscow Olympic Games as was done in the ancient Greek, when a truce was signed for the period of the Olympiads. A good lesson to learn ! ☐

Distance Education

Raghunath Safaya*

We are very familiar with the term 'Correspondence Education' as the system has grown in India during the past two decades. The system is absolutely novel system in so far as it is a major shift from the age old plan of formal education. Formal education is consciously and deliberately planned with a particular end in view. But informal education is not pre-planned. It is incidental. Another type of education is non-formal education which is imparted in a planned manner but not under existing conditions. Candidates desirous of learning but who on account of circumstances cannot join Institutions on regular basis, need some facilities where-by they can study, appear at the examinations and get the degrees. Such candidates are usually far from the Centres of learning. They may be in the villages, interior areas with scarce means of Communications and transport or they may not be able to come to the Educational Institutions because of their personal circumstances. Since such education is imparted through mail from a distant place, an educational institution far away from the candidate, this type of education is also called Distance Education, Distance Education can include all types of courses for the benefit of the candidates.

2. The courses are a boon to those students or earning adults who are unable to join regular courses in educational instiutions. Through the courses, the correspondence student is free to arrange his study hours according to his own covenient and personal comfort. He saves time and energy by studying at home and by losing nothing, in comparison to, as he would gain from formal education. To my mind, the Methodology of Teaching, which has been adopted for Correspondence Courses which includes correspondence lessons, regular assignments, periodical assessment, contact programmes and study at Library Centres, is highly thorough and practicable so that I would recommend even the students of the colleges to attend the correspondence courses and get the added benefit.

3. The correspondence courses are growing in popularity. This is because of the recent socio-economic and technological changes that have taken place in all the countries of the world. Educational experts have come to the conclusion that the present formal education provided in the formal Institutions like schools and colleges, is out of date. The existing educational system which were developed centuries ago cannot be adopted to the new needs and circumstances. The circumstances had widely changed during the past few decades. For example the school age papulation is increasing at a fast rate which is 20% faster than the rate of increase of world population. Every year two million more children are refused the right to education. At this rate in 1980 the number of children of the age group 6 to 14 not attending schools total two hundred and 30 million. At for the adult illiterates, the number will be eight hundred 20 million. Again the world is spending about two hundred million dollars annually on education. Even than not to speak of underdeveloped countries, even the developed countries are not keeping pace with the budgetary and financial requirements for providing education to all. It is impossible to keep pace with the requirements (financial and human) of providing education to the entire societies by means of the formal precedures in the schools or colleges which are set up for imparting education.

4. There is another fact pointed out by world experts on education which needs immediate attention. Recently, political changes have taken place in most of the countries of the world. With the advent of democracy in these countries, social structures are changing and there is need of re-modelling the educational structures so that :

(i) each under-privileged class gets the opportunities of the best education ;
(ii) the difference between the higher social status and lower status is minimized especially through providing equal educational opportunities to all;
(iii) the working class in various administrative, commercial and technical organisations must get educational opportunities in their own fields, for their future progress;
(iv) the economically, impoverished class who could not get college education because of low financial resources, should get the opportunities of higher education;
(v) the adult educated class who are in service should not remain stagnated but should get chances of increasing their qualifications;
(vi) the adult educated class in the particular branch of learning must no isolate from other branches of learning.

5. In 1972, the International Commission on the development of education set up by UNESCO published their report entitled 'LEARNING TO BE'. The members of the Commission have suggested revolutionary changes in the concept and technology of education. The Commission rejects the idea of providing education only during a fixed period, says-ages 6 to 20, but maintains that real education is a life-long actively and every individual must get opportunity to keep learning throught his life. As such the present schools and colleges providing formal education to a particular age group are an anachronism. They can hardly cope with the need of continuation education for each adult throught his life. The Commission recommends that education should be dispensed and acquired through a multi agency. All agencies and all modes of technology must combine to provide life-long education to the knowledge-hungry learners.

6. When we take into consideration the above facts regarding the socio-economic changes in the world societies and changes in the educational concept and technology, we come to know that self-

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**Principal, Govt.-College of Education, Chandigarh.*

CONVOCATION

Research Imperatives of Agricultural Advance in the 1980s

Fifteen years ago, we set our goals to make the country self-sufficient in food. In 1978-79, India achieved a record production of 131.4 million tonnes of foodgrains compared to 45.0 million tonnes in 1947. Today, we are self-sufficient in food. This three-time improvement in foodgrains production within a period of 30 years has been possible due to new production technology developed by Research Institutes and Agricultural Universities and adopted by our farmers. Main ingredients of the technology are : (a) extension of irrigation facilities, (b) high-yielding varieties, (c) increased use of fertilisers and (d) adoption of improved agronomic practices.

The major contribution to food production came from wheat and rice. Wheat production trebled over past 15 years. Rice production has started moving up despite problems of pest incidence and water management. Similar production advances have been registered in the case of cotton and potato. We have yet to make a significant progress in the production of pulses and oilseeds which are mainly grown in dry farming areas under precarious soil moisture conditions and without much fertiliser application. Non-availability of quality seed, inadequate plant protection and lack of adequate price support have been the principal constrains. Also compared to elite cereals, these crops have been relegated to sub-marginal lands. However, even in the case of pulses and oilseeds there are real possibilities of increasing production substantially with available technology.

Research advances made in the areas of dryland agriculture, salinity control, milk production, disease control, poultry production, and fish culture have started having their impact on production and productivity introducing at the same time an element of diversification and stability into our agriculture. Lactation milk yield of a cross-bred cow is about four times that of a *desi* Cow. Improved strains of poultry now available give 260 eggs a year compared to the present average of 50 60 eggs and a fisherman can grow 3000-4000 kg fish per hectare under composite fish culture where he grew only 600 kg hitherto. Doubling of production at least on a part of dry farming area is an achievable goal.

In spite of availability of adequate foodgrains in the country there is a great deal of malnutrition particularly among the poor who do not have purchasing power due to unemployment/under employment. Hitherto, a production problem has now become a problem of equity and distribution.

Another important factor which we must take into consideration is that although food production has made significant progress, average yields on a national basis continue to be relatively low. It is generally agreed that only a small part of technology available (15-20 per cent) is finding application on farmers' fields and our farmers are generally harvesting only one-third or one-fourth of the crop yields which are now possible in many cases. The average yield of wheat in Uttar Pradesh for example is 14 quintals per hectare as against the demonstrated potential of 60-70 quintals per hectare. We must critically examine the steps which we must take to realise this untapped yield potential.

If there is one lesson that we can learn from our experience during the past 15 years, it is that no major progress in agricultural production is possible without the availability of a sound technology. Fortunately, this is one area where the country has laid down sound foundations for continued progress in the years to come. India today has one of the largest physical infrastructures both in agricultural education and research in the world. The country has 35 Central Research Institutes and Project Directorates and 21 Agricultural Universities covering almost all the States. Even more important are the All India Coordinated Research Projects of the ICAR which are run in mutual partnership by the Research Institutes and Agricultural Universities. Having laid down this strong institutional base and a national grid for research, the emphasis in the years to come would naturally be on a qualitative improvement and on increasing the research output per scientist. We must remind ourselves that progress of agriculture can be sustained only with a dynamic research and training base. Without this base success would be shortlived.

One greatest concern at the moment is the transfer of technology that has already been generated and the wide gap that exists between actual and potential farm yields. It would appear that the gap is more on extension-cum-management-cum public policy gap rather than a technology gap. A critical socio-economic analysis only could identify the relative role of different constraints for each situation. This then is one priority area for research where collaboration with social scientists would have high pay off.

Next to High Yielding Varieties, irrigation has been a major contributor towards production. Irrigation is essential both for increasing and stabilising yields. Emphases is, therefore, being given to bring maximum area under irrigation, 15 million hectares by 1983. The aim is to fully utilise the ultimate potential of 113.5 million hactares by the year 2000. But even after realising the full irrigation potential, about 55 per cent of the cropped area would remain rainfed. Hence the continued importance of dryland agriculture.

Today, about 70 per cent of cropped area is rainfed which contributes 50 per cent oilseeds and pulses and about 45 per cent of cereals. Over 100 million hectares of the dry farming areas, mean annual potential evapotranspiration exceeds the mean annual rainfall and these semi-arid areas suffer chronically from drought, soil erosion and wide fluctuations in production. Therefore, unless we optimise production under dry farming conditions our goal of *stability* may not be achieved. It is in this context that the dryland agriculture project was started about ten years ago. Since then appropriate technologies for stabilising crop production have been developed such as water harvesting for life saving irrigation, watershed management, moisture conservation, formulation of contingency cropping plans for drought prone areas and compensatory planning for non-traditional seasons. Adoption rate of technology in dry farming areas is even slower. Although doubling of yield is a distinct possibility, element of uncertainty and high risk serve as disincentives and farmers are, therefore, shy to adopt improved package of practices. They need low cost technologies. Although dryland agriculture is at the threshold of a major revolution, only imaginative look at research strategies would seem to hold the key to the future improvements. Researchers will have to carry out water-balance studies, develop crop genotypes especially suited to inter-cropping systems so as to benefit from allopathic effects of associate crops. Also, the plant physiology and agro-meteorological base of dry farming needs to be strengthened a great deal.

Fertiliser is another important production factor. Its use has gone up to 5.12 million tonnes in terms of integrated nutrients in 1978-79, while hardly any chemical fertiliser was used in 1947-48. Our aim is to reach the target of 7.8 million tonnes by 1983. In spite of this phenomenal progress, the per hectare consumption in India is still only 30 kg as against 428 kg in Japan and 730 kg in Netherlands. Our dependence on fertiliser imports may continue for many years despite an enormous investment in creating indigenous capacity. The escalation in the international prices of fertilisers and their difficult availability have been a serious problem to our agricultural growth. Our strategy, therefore, is to enhance efficiency of applied fertilisers and step up the use of biofertilisers by developing as part of an integrated nutrient supply systems. More extensive use of legumes and green manures in cropping systems and of blue green algae and Azolla in rice culture should form an important part of the strategy.

On the one hand, our agriculture is getting more and more energy dependent with increasing use of fertilisers, irrigation, pesticides, etc., on the other, the energy supplies are getting reduced and energy costs are going up. We also need energy for crop drying, food processing, transport and storage. In the wake of energy shortage we are trying to tap solar and wind energy as well as biogas resources. Animal energy also need to be nurtured and used effectively for irrigation, transport and other purposes. We should also lunch programmes for harnessing both renewable sources of energy and nutrients for on-farm use. Our present production technology makes it possible to produce about 20 tonnes per hectare of biomass which is reported to be equivalent to 48 barrels of oil. If so, our total requirements for oil 20 million tonnes, can be met from 1.25 million hectares of irrigated land annually. This may be too optimistic an estimate but sugarcane in South India with 80-100 tonnes per hectare yield can be a promising source of energy. In any case fossil energy conservation requires priority attention. Biological nitrogen fixation would be an important alternative to replace chemical nitrogen.

The annual field losses from *pests* (insects, diseases, weeds, rodents and nematodes) are truly enormous. All major crops suffer losses before harvest and after harvest. Apart from resistant varieties, one of the growing needs of the day is "real time management of agricultural systems" and institution of effective 'integrated pest management' and 'pest surveillance' services. There has to be more than single line of defence, resistant varieties improved management, biological control, carefully timed application of chemical—all in concert.

There is need for a mechanisation system for producing more food and at the same time put more people to work and more effectively. Mechanisation should lead to more man hours per unit area per year, more work days and more uniform distribution of work over the year. There is need for selective mechanisation to enhance yields and to minimise losses.

While the need for forging and introducing new technologies for increasing yield is urgent, the process of man-made damage to agricultural assets which is proceeding unabated has to be stopped. We must realise that the prerequisite to sustainable development is conservation of natural resources, both living and non-living. Conservation should benefit the present generation while maintaining potential to meet the needs of future generations. Patterns for development should, therefore, aim at conservation of resources.

The ecological system in India is currently under great stress due to growing pressure of human and livestock population. Forests are being denuded, marginal lands are being cultivated, grasslands are being overgrazed. There is soil, erosion in the uplands and sedimentation and flood downstream. Desertification is on the increase and the renewable resources are getting depleted. The very resource base of production is under threat. The challenge is to make ecological resource more productive and less hazardous.

Land is a basic and inelastic source and it takes nature about 300 years to form one cm of top soil but 6000 million tonnes of soil is being eroded every year, and with it are carried away 8.4 million tonnes of nutrients, which is more than what we are using at present. About 150 million hectares of the land area is subjected to water/wind erosion. About 25 million hectares suffer from waterlogging (3 million hectares); salinity (4.5 million hectares); alkalinity (2.5 million hectares); ravines (4 million hectares) and shifting cultivation (3 million hectares). About 20 million hectares are affected by floods. Inflow of sediments into reservoirs is over 200 per cent more than the planned inflow. Hence the urgent need for soil conservation and reclamation.

Water is the key resource for future development of our agriculture, but efficiency of applied irrigation is only 30 per cent in India at present as compared to 80 per cent in Israel. About 30 per cent of the irrigation water is lost through conveyance channels before it reaches the fields. We must, therefore, minimise the waste and optimise the management of available water resources.

India is endowed with immense diversity of *fauna and flora*. This has been an invaluable source of genetic variability for our breeding programmes. It was to conserve these resources that the National Bureau of Plant Genetic Resources was established to carry out exploration, collection and utilisation of plant genetic resources. Similar Bureaus are to be established for collection and preserving animal and fish germplasm resources. One of the important tasks of NBPGR would be to introduce and promote the culture of underutilised plants such as winged beans, guayule, jojoba and Euphorbia.

It would not be possible for me in an address like this to deal comprehensively with the subject I shall however, try to recount some of the major trends.

Emphasis is changing from single crop research to "cropping systems" and to "farming systems" research. Accordingly, mixed farming systems with varying combinations of crop-livestock-fish components are emerging. Multi-level farming around plantation crops and poly-culture in fish farming are likely to be the subjects of more intensive research in future. While thrust on problems of irrigated agriculture continues, dryland agriculture is emerging as a challenging sector. With enhanced use of irrigation, fertilisers, high plant populations, and increased cropping intensities, problems of water management, pest management, crop nutrition and pesticide residue analysis are becoming more and more complex.

Appreciating the need for conservation of natural resources, research efforts are being increasingly focussed on soil-water-plant conservation and watershed management. Crop planning in relation to eco-system and scientific land use planning have been weak links hitherto, and need a fillip. Agro-forestry and desertification are emerging as new areas of vital importance for research. Energy plantations and biomass production systems likewise are becoming more important in the context of energy shortage.

With milk and poultry production emerging as important components of mixed farming systems feed and forage research including development of sylvipastoral systems will have to receive more attention. The focus is thus changing from production factor research to resource conservation research including energy conservation and conservation of post harvest food losses both in quantitative and qualitative terms. The more we strive to achieve stability in production in the face of aberrant weather as well as post incidence, the more we feel the need for strengthening agro-meteorological research. We also need to enhance the socio-economic content of our research programme to find solutions to the problems of transfer of technology. Also we need to do a great deal more of mission-oriented basic research in order to overcome the "plateauing effect" in crop yields. It is obvious that applied research alone may not be able to resolve the constraints.

Questions are often raised about the comparatively lower yield potentials of pulses and oilseeds compared to cereals. Pulses and oilseeds are energy-rich crops, while 1 gm of glucose manufactured through photosynthesis could produce 0.83 gms. of starch, it would produce only 0.40 gms proteins and 0.32 gm. of lipids. On energy considerations, therefore, there is a calorie penalty in the case of pulses and oilseeds and one should not theoretically expect at this stage the same order of yield potentials as met with in cereals. It is also clear that another quantum jump in cereal yields is not in the wings. Further yield increase would depend on level of soil and water management and plant protection. A breakthrough in level of crop husbandry is an imperative to major agricultural advance.

Further, our emphasis in research is shifting more and more to problems of small farmers—how to diversify his cropping, his income sources, his production capabilities and thus to enable him to share the benefits of development.

Crops account for major part of our food supply. They are also a cheap source of renewable industrial raw materials. Therefore, researchers on biological processes such as photosynthesis, biological nitrogen fixation and cellular approaches to plant breeding that control and limit productivity are particularly crucial and relevant to crop improvement. Improved efficiency of photosynthesis holds key to the future adequacy of our food supplies. Green plants are primary harvesters of free solar energy. They are biological sun traps. They are net producers of food and energy on a renewable basis. Therefore, all farm practices must aim at increased appropriation of solar energy in the plant system. Agriculture is basically a solar energy processing mechine, yet few studies of photosynthesis have focussed on crop productivity and biomass production. The whole intent in agriculture is to collect and store solar energy as a renewable source of food, feed and fibre in plant and animal products and to do it with utmost efficiency. This efficincy is only less than 2 per cent in the major food crops. For most crops solar energy utilisation does not exceed 1 per cent. The aim in photosynthetic studies would normally be to identify and control mechanisms that are responsible for redistribution of photosynthates in order to maximise harvest-index.

Both the efficiency of solar energy utilisation and conversion of cultural energy into food energy would determine the efficiency and cost benefit ratio of a farming system. Hitherto, farm systems were assessed on the basis of their productivity and profitability. Energy needs of agriculture received only scanty attention. In the wake of high cost and acute shortage of non-renewable resources it is necessary to pay more attention to energy balance. Development of varieties with greater efficiency for conversion of cultural energy into food energy and biological nitrogen fixation through legumes are the kind of mechanisms which would help save non-renewable forms of energy. Although the energy balance is quite favourable in India at present compared to other countries, there is need to develop technology where improvement in productivity is not simultaneously accompanied by a heavy loss in the efficiency of energy conversion.

Chemically fixed nitrogen is a non-renewable resource. It is also the most costly and fossil energy dependent industrial input into agricultural productivity. About 30 per cent of total production capacity of crops is now credited to this single input. Almost one-third of all fossil energy now used in agricultural production goes to chemical nitrogen fixation synthesis. It is inconceivable for us to use non-renewable resources indefinitely. The alternative is to enhance biological nitrogen fixation. We should increasingly adopt cropping system with legume as a component and work for genetic improvement of both host-plant and micro-organisms. Research efforts should be stepped up to improve the biological nitrogen fixation associations with grasses, cereal grains and other non-legumes. Biologically fixed nitrogen is slow release nitrogen and, therefore, losses from nitrification/denitrification which now approximate over 50 per cent of fertiliser nitrogen could be reduced to half.

Conventional selection and hybridisation techniques have given us super strains of rice, wheat, maize, sorghum and many fruit and vegetable crops. Combining high productivity, high nutrition quality and disease resistance would remain the continuing challenge to the plant breeders. Development of salinity resistant in plants would indicate that genetically controlled plant nutrition will surely play an increasingly important role in the future crop production. Cell culture and protoplast fusion could become a major tool for making distant crosses to synthesise new species/genotypes.

Resistance breeding is still the area of high priority. This would include poly resistance to diseases and pests, cold and drought resistance and even resistance to toxicity of certain micro nutrients. With the different cropping systems coming into vogue there would be need to evolve varieties suited to high density monoculture, inter-cropping and three dimensional crop canopies Varieties with crop canopies that provide maximum interception of light, which make the maximum use of CO_2 and which have a pattern of root development to enable extraction of nutrients and moisture from different depths would be required, if agricultural production is to be increased through intensive cropping techniques. A small farmer would need, in addition, to hybrids, easy-to-grow synthetic and composite varieties. The newer varieties may have to possess an optimal blend of vertical and horizontal resistance to the important pests and diseases. Multi-lines would be needed to create genetic and inter regional barriers against epidemics.

Only 25-35 per cent of applied nitrogen is actually utilised by the plant. Balance is lost through de-nitrification or leaching. Crop productivity could be greatly improved if this enormous loss could be even partially reduced. There is, thus, need to strengthen research aimed at better utilisation of applied nitrogen and reduction of nitrogen losses.

An important aspect of future research would relate the fertilizer use efficiency on the one hand and biological fixation of nitrogen through Rhizobia, Blue green algae, Azolla and Spirillum. In order to reduce losses of applied nitrogen through leaching in light soils, because of denitrification of nitrates in submerged soils and through volatisation of surface applied urea, techniques of using nitrification retardants and slow release fertilisers will have to be developed using indigenous material such as neemcake.

Search has to be on for super symbionts in Rhizobia with properties of high infectivity, wide host range, capability to fix nitrogen regardless of nitrogen constraints and efficient ammonia delivery system to the host.

One of the most prospective areas for future research particularly in the area of horticulture would be to study the hormonal mechanisms in relation to plant development. Use of chemical ripeners in sugarcane, of ethrel to improve flow of latex from rubber trees would illustrate that physiological manipulation of plant processes through hormonal treatments is becoming increasingly a distinct possibility.

In the area of animal sciences more efficient utilisation of feeds and forages, increased fertility, disease control and genetic improvement would still remain the areas of major interest. In order to increase the calving efficiency of cattle and buffaloes, studies on oestrous synchronization, control of reproductive cycle, semen preservation, pregnancy detection, super ovulation with hormonal treatment are receiving greater and greater attention. In breeding the objective could be development of superior animals for low quality diet. The increased use of non-protein nitrogen (urea) and conversion by ruminants would continue to be an important area of research. Likewise, as marginal and range lands receive more and more attention, research on forage production and carrying capacity of range lands would gain importance. Extensive use of treated cellulosic material as cattle feed could open up new vistas.

New high pay-off agricultural technologies for the future will not only be those which result in increased production and high yields but also those which are sparing of resources. They would be the ones which would increase demand for under-utilised labour resources and provide more work days per year and more productivity.

Considering that there has been a tendency for 'plateauing of yields' of major food crops since 1970, there would be need to step up mission-oriented basic research relating to biological processes that control and limit productivity. Investment in agricultural research which is very low at the moment will have to be increased substantially. Agriculture advances in future would require in addition to new technologies, massive resource inputs, economic incentives and favourable public policies.

Technologies per-se may be scale neutral but then adoption in practice may vary widely from one farm situation to another. Yield stability, low risk bearing capacity, low cost and profit maximization are some of the characteristics that we should keep in view while developing appropriate technologies for our small farmers. Under small farm situation, we need to develop technologies which would be suited to group action. Operation Flood II, a cooperative movement aims to improve the income and living of 10 million farming families. We should plan to have similar programmes in the field of aquaculture and watershed management.

Above all, there is need to put available technology to actual use. The time between a discovery of the technology and its adoption must be minimised. Collaboration between basic science workers, applied science workers and communication experts and social scientists would be almost inescapable in future. We need to make greater investment not only in research but for diffusion of knowledge also. The future viability of our agricultural development will depend on how the results of research relate to the production problem of 1980s and the decades beyond.

In the last two decades, significant yield gains were achieved through introduction of high yielding varieties and fertilisers. As we look to the decade ahead, more research would be needed on development of efficient water control and water use system both on irrigated and dry farming areas; plant protection, ways to avoid food losses after harvest and sociological aspects of technology. It seems that to maintain output growth in the decade ahead is going to be more difficult and more costly than in the past decade. This calls for a renewed determination on the part of our scientists and the Government to tackle the problem more resolutely.

[*Excerpts from the Convocation Address delivered by Dr. O.P. Gautam. Director-General, ICAR, at the University of Agricultural Sciences, Bangalore*].

Personal

1. **Prof. G.S. Marwaha, Director, Indian School of Mines, Dhanbad, has been elected all-India President of the Mining Geological and Metallurgical Institute of India.**
2. **Dr. Ramavtar Shukla has taken over as the Vice-Chancellor of Patna University.**
3. **Dr J C. Kundra has been appointed Vice-Chancellor of Magadh University.**
4. **Mr. S.K. Chaturvedi has been appointed Vice-Chancellor of Bhagalpur University.**
5. **Mr. Bhaskar Banerjee has been appointed Vice-Chancellor of Mithila University.**
6. **Dr. K.S. Singh has been appointed Vice-Chancellor of Ranchi University.**

Association of Indian Universities

D.D. Upadhyaya Marg, New Delhi-110002

Applications are invited from College/University Teachers for admission to a Basic Level Correspondence Course in EVALUATION METHODOLOGY AND EXAMINATIONS. The duration of the course will be six months (1st July, 1980 to 31st Dec., 1980). The course is likely to be conducted from four Regional Centres (Mysore, Bombay, Shillong and Delhi) and will be coordinated by the Research Cell of the Association. A personal 'Contact Programme' at the centres is also planned.

Requests for prospectus and prescribed application forms, accompanied by a crossed Indian Postal Order for Rs. 5/- drawn in favour of the Association and a self addressed stamped envelope (45 paise) should reach the undersigned. The last date for the receipt of applications in the prescribed form, will be **June 15th** for non-sponsored and **June 30th** for sponsored candidates.

Prof. V. Natarajan

CAMPUS NEWS

Reorganisation of Education and Restructuration of Courses at Jammu University

The canvas of higher education in the University of Jammu is being redesigned in the wake of suggestions and recommendations which have been made, during the last few decades, by the various national and State level committees and those embodied in the Policy Frame and Guidelines for reorganisation of education issued by the University Grants Commission. The State Government has already accepted and launched the New Pattern of Education, viz. 10+2+3.

After thorough deliberation and in consultation with the Boards of Studies and Faculties, the Academic Council of the University of Jammu has recommended introduction of the First degree Pass Programme of the duration of two academic years after 12 years of school education to provide broad-based education in related disciplines, and Honours Programme of the duration of one academic year after the Pass Programme with emphasis on indepth study in a discipline. The components of the first degree programme will include Foundation Courses in order to generate in every student a greater awareness of man and his environment—social, cultural and natural. There will be a provision of core/elective subjects including application-oriented courses to provide the student with a broad exposure to several disciplines and an opportunity to study some chosen subject or subjects in depth and bring him at this stage to the frontiers of knowledge in his area of study. There will be an organic relationship between the academic component and the applied component of each subject so that a student could apply his theoretical knowledge to solving the problems of the region as well as those arising out of the fast changing social milieu through field studies and project work. Community service and extension work are proposed to be introduced progressively as a means for making courses and studies relevant to the needs of the society and oriented towards a solution of existing problems. The postgraduate education will be aimed at specialisation and initiation to research.

It is envisaged that to realise the aims of education adequately, to make teaching-learning process more meaningful, relevant and rewarding; to bring about flexibility in the choice of courses (suiting the needs and aspirations of the individuals), to strengthen the standards of courses, to encourage inter-disciplinary studies, to sustain interest and assess students on continuous basis, to promote dynamic instructional techniques and learning modes and ultimately to make end-of-the-course evaluation a pleasant experience, the undergraduate and postgraduate programmes should be restructured in terms of semester system which inhere unit/module based courses, continuous sessional evaluation and improved methodology of teaching. The centre of gravity has to shift from teaching to effective learning, characterised by the achievement of specific objectives through tutorials, seminars, problem-solving sessions and home study instructional devices. All this would involve new approach, strategy and content of courses and different examination system as lately vociferated by experts and as endorsed by the University Grants Commission in the "Examination Reforms: A Plan of Action".

The semester system is proposed to be introduced in the University of Jammu at the postgraduate level with effect from the academic session 1980-81 and at the undergraduate level with effect from the academic session 1981-82, preceded by adequate preparation.

College Development Council—Role of

The reformative and innovative measures to give a dress-up and new look to the panorama of higher education sector were initiated by the College Development Council since its inception in the University in March 1979 under a scheme sponsored by the University Grants Commission to ensure planned and integrated development of colleges and improve standards of collegiate education which cover about 85% of the student population at the University stage. The Council has been working in intimate association with the academic bodies of the University in a searching introspection of the merits, modes and models of the existing plaza of University education and in the endeavour to make pursuit of education in this lyceum purposive, need-based and application-oriented. Such an enterprise needs careful planning, thorough understanding of the concepts and procedures involved and committed participation and involvement of the academics, students, planners and administrators. To this effect the Council has already initiated a number of measures to create greater awareness and understanding of the postulates and the spirit underlying the semesterisation of courses and generate a sense of confidence among the teachers and students about its utility and comparative merit. Discussions on vital issues like teaching-learning strategies and the operational challenges and impediments involved were held in all the academic bodies of the University.

Almost all the departments of study of the University have instituted M. Phil courses. Six departments of the University have been identified by the University Grants Commission to undertake M. Phil and Ph.D. Programmes for college teachers and award Teacher Fellowships to the extent of 10 in each department under the Faculty Improvement Programme. These openings are offered to College teachers for updating their knowledge and improving their professional competence. M. Phil Programme has been designed in such a way that it could be a course-oriented terminal degree or it could be a first research degree leading to entry for Ph.D. degree.

Profiles of all affiliated colleges have been prepared by the Colleges Development Council. Each College is being assisted to engage in institutional planning and have a perspective for development in the light of changes in the educational structure, approach and content contemplated by the State Government and the University bodies. Special teams of senior academics have been constituted to visit each affiliated college in order to discuss with the college faculty their essential needs, infrastructural requirements and development projections. Details of additional physical inputs required by each college as assessed by the special inspection teams will be forwarded to the State Government for allocation of requisite funds, so that the semester system project could be launched from a solid physical base.

The State Government has already provided to the University a sum of Rs 50,000.00 as seed money for initiating preparatory measures for introduction of Honours courses in the colleges.

The College Development Council has been waiting for guidelines and indication of pattern of financial assistance to be provided by the University Grants Commission to colleges for development during the Sixth Plan period. Development schemes of the colleges will be formulated and finalized in the context of the UGC guidelines when received. In the meantime the pace of development of colleges has receded for want of financial support from the Commission for development projects.

Seminars/Workshops/Conferences

A seminar on "Semester System: Rationale, Machanics and Implications" was held in the University on 11 and 12 February 1980. It was inaugurated by the Governor of the State who is the Chancellor of the University. More than 100 Faculty members of the University departments and affiliated colleges participated in the discussions. Resource persons from Jawaharlal Nehru University and the Universities of Rajasthan, Meerut, Poona and Kashmir also took part in the deliberations. The Seminar recommended adoption of semester system first at the postgraduate level and thereafter at the undergraduate level.

For further dissemination of information and generating more awareness about the various facets of semester system, a two-day "Semester System Appreciation Programme" has been planned to be held in the University on 2 and 3 May 1980 for college teachers. Five teachers have been invited from each of the nine colleges offering B.A./B.Sc./B.Com. courses. The programme will be repeated so that more college teachers are associated with the study and understanding of the rationale, processes and procedures and implications of the semester system before the system is introduced in colleges.

After the initial exercise and course of discussions held in the meetings of the College Development Council, the Boards of Studies and the Faculties in May 1979 regarding the proposed curricular and examinations reforms and formulation of a suitable educational design based on semester pattern, the Boards of Studies have been meeting again in April-May 1980 to consider course structuration in each subject, determine instructional objectives in each course and formulate detailed syllabi for the First Degree Pass and Honours Programmes under the semester system, for which comprehensive guidelines and formats were devised by the Academic Council. The Boards of Studies are also deciding the components and mode of continuous sessional evaluation and lists of additional books, journals and equipment required in colleges. Meetings of the Faculties will be convened after the Boards of Studies have made their recommendations. The Academic Council at its meeting held on 15 April 1980 have finalised the draft Statutes for the undergraduate and postgraduate courses under the semester pattern. It has been recommended that in non-laboratory courses the weightage of internal assessment should be 25% of the marks allotted to the course and in laboratory courses it should be in the ratio of 50:50. Since the set of abilities tested in continuous sessional work are different from those assessed in the semester examination, the performance of each student in the internal assessment and the semester examination is to be shown separately in the transcript to be issued to each student. The division in which a student is to be placed is, however, to be determined as a composite index on the basis of aggregate marks of the internal and semester examinations.

A two-day workshop has been designed to be held on the "Question Paper Design and Evaluation Techniques". Five teachers from each of the affiliated colleges have been invited to participate in this workshop.

After the syllabi for the Honours courses have been formulated, orientation programmes for college teachers are proposed to be organised in each postgraduate department for discussion on the latest developments in the subject concerned. This will help in a participative effort to focus attention on the course content and instructional strategy for the proposed Honours Programme.

Sophistication of the tools of instruction and evaluation need special attention in order to make teaching-learning more effective and meaningful. At the same time it is necessary to develop question banks in each subject for the First Degree Programme to bring about better inter-action between what is taught and what is assessed. Monitoring of outcomes of the innovative measures to the academics is essential as a feedback for effecting improvements. Blue prints for holding workshops and training programmes on these aspects of the reformative measures have also been drawn up.

Foundation Courses

After the Academic Council approved an illustrative list of subjects to be introduced as Foundation Courses to generate general awareness among students at the First Degree Pass Programme, it has been decided to prepare reading material for the following Foundation Courses:-

1. Indian Cultural Heritage
2. Freedom struggle in India and other Parts of the World
3. Science in Everyday Life
4. Science, Technology & Development in India
5. Social and Economic Profiles of Jammu & Kashmir
6. Man and His Environment.

Senior academics have been selected to prepare the scope of study and course content and draft syllabus in each of the above courses and suggest mode for preparing reading material suited to our needs which will be arranged even by engaging commissioned authors. Every student at the undergraduate level will be required to offer one Foundation course in each semester.

Norms of workload and teaching staff

Adequate teaching staff is a pre-requisite for successful implementation of the semester system. The Academic Council, on the recommendation of the College Development Council, has approved the following norms for the size of theory and practical, tutorial group and teaching load for teachers in the colleges:

(a) size of a section in a theory class should not exceed 60;

(b) size of group in a practical class should be 15 to 20 students per teacher;

(c) a tutorial group should have about 15 to 20 students :

(d) teaching load (direct contact hours) for a teacher should be 14 hours per week.

Normal work-load of a teacher is 40 hours per week which includes, besides direct contact with classes, time required in preparing lessons/laboratory, correcting/marking internal assignments, assessment, research guidance and supervising other academic and extra-curricula activities.

Planning & Research Unit

With the introduction of semester system and its essential concomitants, such as restructuring and enrichment of courses, continuous internal assessment, new teaching and evaluation techniques, question banks, etc. the University will be embarking upon a radical and ambitious change in terms of curricular and examination reforms. It has been felt that an expert central agency is essential to be set up in the University to serve as a research centre to nourish and sustain the new system with its avowed objectives to—

— formulate plans and proposals and devise processes and procedures connected with the implementation of semester system;

— assist in reviewing periodically the reforms introduced and monitoring information;

— serve as a watch forum and provide consultative services in regard to day-to-day problems relating to the reforms;

— help in preparation and sophistication of tools of teaching and evaluation, development of question banks and better designing of question papers;

— undertake empirical research in matters and problems relating to semester system.

It has therefore been proposed to set up a Planning and Research Unit in the University manned by a Consultant and Technical Assistants having specialised in Educational Measurement and Evaluation. The University Grants Commission has been approached to finance the project. The University of Jammu will indeed be playing a pioneering role if such an agency is set up and functions effectively.

It is expected that the preparatory measures and awareness courses undertaken or proposed to be undertaken in the University of Jammu will provide an effective base and solid prop for successful implementation of the new educational programme linked with semester system.

Students to be represented on the Senate and Academic Council

The Andhra Pradesh Education Minister, Mr. B. Venkatarama Reddy while inaugurating a seminar on students problems and cultural activities organised by the Andhra Pradesh Student Council said that students would be given representation in senates and academic councils of the universities in the State. The Bill to this effect was being presented to the Legislative Assembly in the next session. The Education Minister also said that the Government would introduce meaningful terminal courses at puls two stage to help the drop-outs. The government was also trying to restructure courses at the undergraduate level for the benefit of students. The vocational course would also be introduced at various levels to make students self-dependant. He said that there was no proper cultural forums for the students. If students were given opportunities, the so called indiscipline attributed to students would not be there.

UP Vice-Chancellors meet the Chancellor

Mr C.P.N. Singh, Chancellor of Universities and Governor of Uttar Pradesh while addressing the Vice-Chancellors of the State Universities in Lucknow pleaded for working out of a time table of action to deal with the problems facing various campuses. Referring to the problem of student unrest, Mr. Singh observed that they were said to be victim of changing values of society. They had no faith in the past and they had no hope for future. But if you begin to introduce changes in the examination system and if you begin to mobilise the large numbers who wish to study, the dimensions of the problem would certainly become much more manageable than they are today.

Mr. Singh said that there was problem of involvement of political parties with election to student bodies. He said that in a democratic society, students especially at the university stage, had a duty to acquaint themselves with the broad socio-economic and political issues before the country and to look at different solutions being canvassed by political parties.

The Governor called upon the Vice-Chancellors to initiate a serious effort to obtain a new situation in which youth could be the centre of educational process. He felt that the educational system has become obsolete and the time was running out. It was the time to act and give a thought for a reform in the existing pattern of education to suit the requirements of the youth. He said that it was unfortunate that our universities had not shown adequate awareness or responsiveness to the latest trends in educational research.

Describing the situation in the universities as uncontrollable and irreversible, Mr. Singh said that university education was gripped with serious maladies. The situation in Uttar Pradesh posed a greater challenge than anywhere else in the country. He said if all the four central values and powers of personality were rightly balanced throughout the process of development and if a healthy equilibrium of these powers was upheld progressively, we could assure an integral development of personality which was indispensable to the highest aims of man's future evolution. These four values, he said, were knowledge, power, love and skill in works. Giving the reasons for the failure of finding out a satisfying solution to various problems of students, the Governor said there had been too much reliance on piecemeal thinking and ad hocism rather than on a global thinking and a right correlation of various issues.

The Vice-Chancellors' conference recommended the formation of security force consisting of teachers, students and the staff members on the lines of Home Guard to do away with the increasing demand for police pickets on the campus to maintain law and order. The Vice-Chancellors were also in favour of abolishing the first year examinations of the graduation course in view of the long period of time to conduct such examinations. A system of a year-long evaluation of the students' academic session would be an ideal allernative to it.

Dr. J.D. Shukla, Adviser to the Governor, on the concluding day said that the academic session of Lucknow and Allahabad Universities would begin some time in September since the universities had started their sessions late. Only Meerut and Bundelkhand Universities were in a position to begin their sessions in July. The rest of the universities would complete their sessions by September-end.

The Vice-Chancellors also strongly recommended that students who had been convicted of violence and moral turpitude should not be given admission. Further who had completed seven years in any university would not get re-admission. The conference felt that walk-outs should be treated as acts of indiscipline and no re-examinations should be held in such cases. At the centres where mass copying was detected, the examinations should be cancelled and fresh examinations be held. As far as the students unions were concerned, the conference was of the opinion that those students who had put in less than one year and more than five years in a university should not be eligible to contest the union elections. This would discourage professional 'netas' from using universities as a plank for entering the State politics.

Dr. Shukla said that the Vice-Chancellors favoured permitting the use of Bare Acts in law examinations. They however felt that the practice of double post-graduation should be done away. Only private candidates should be allowed to do so. A system of continuous internal assessment should also be introduced at the postgraduate level to supplement annual examinations.

The conference also formed two committees to study the UGC's recommendations for the 10+2+3 system in the State and to go into the criteria for the appointment of degree college lecturers. An examination cell has also been set up to recommend reforms in the examination system.

HAU sports college taken over by Sports Deptt.

The Haryana Government has decided to delink the College of Sports from the Haryana Agricultural University and hand it over to the State Sports Department.

The students have been demanding for quite some time a change in the sports syllabus to make it really sports oriented. They wanted subjects like history, political science and sociology to be removed from the syllabus and suggested the inclusion of General Knowledge as one of the subjects. Students have also been pleading for more fund allocations for the Sports College rather than Sports School in Rai. They said that it was just a public school with no sports achievements. They are also opposed to the shifting of the Sports College to Rai.

Special General Body Meeting of AIU held in Delhi

A Special General Body Meeting of AIU was held at the India International Centre, New Delhi, on May 12-13, 1980. Dr. Ramaranjan Mukherjee, Vice-Chancellor, Burdwan University presided. It was attended by 45 Vice-Chancellors of the Universities in India besides, representatives of the Ministry of Education, the N.C.E.R.T. and the Central Board of Secondary Education. The Association of Indian Universities suggested to the Ministry of Education that it should convene a conference of the various all-India and professional bodies concerned with coordination and academic standards. This would refer in particular to the University Grants Commission, the Medical Council of India, the Indian Council of Agricultural Research, the Bar Council, the All-India Council of Technical Education and the Association of Indian Universities. These various bodies are concerned with the maintenance and coordination of standards. Over the years, these various bodies have gained a wealth of experience. It is important to bring them together and *establish coordination even amongst these various bodies.* Whether there should be a Standing Council of these various regulatory bodies under the chairmanship of the Minister of Education or not should also be discussed by this meeting. Owing to a number of non-academic reasons, the functioning of universities and other institutions of higher learning is not what it should be. Both for reasons of prestige and education being a concurrent subject now, it is but appropriate that the initiative in this respect be taken by the Union Ministry of Education.

2. The Association has pleaded for at least twice the allocation made to higher education in the previous Plan as the minimum for the Sixth Plan. It adopted the following resolution.

"This meeting of the Association of Indian Universities feels gravely concerned over the drastic reduction in the allocation of Plan funds for higher education. While the Association fully appreciates the Government's move to place more resources for the expansion and development of primary, secondary and adult education, the Association feels that this should not be done at the expense of higher education because it is bound to prove counter-productive. A weekened system of higher education can hardly be instrumental in strengthening the other sectors of education.

The universities are in the process of development and they require adequate funds for stabilising standards of education and in order to fully develop their research potential. Postgraduate education in the country serves as the basic infrastructure for sustaining research in the universities as also in the country as a whole. There are currently efforts being made to make university research in science, technology and social sciences relevant to the solution of national problems. This effort is bound to receive a setback unless sufficient funds are made available to the universities.

The share of the universities and other institutions of higher education in overall research grants is already so small that they are hardly able to undertake meaningful research of an international standard.

Taking into account the present rate of inflation the allocation of even 50% to 60% more would only amount to barely maintaining the levels of the Fifth Five-Year Plan. It is therefore essential that for any significant development to be registered during the Sixth Plan period the allocation for higher education should be much higher i.e. to say at least twice the allocation made for it in the previous Plan.

The Association therefore strongly urges the Government, the Planning Commission and all concerned bodies to provide higher education with the necessary wherewithal to enable it to play an effective part in making the nation self-reliant and accelerate the pace of development".

3. The Association felt greatly concerned about the situation in Bihar. In the absence of concrete data and the general crisis situation in that State, the Association asked its President and Secretary to visit Bihar within the next few weeks and talk to the Chancellor and others connected with higher education so that, in the months to come, appropriate academic decisions are taken and the universities are enabled to get out of the morass in which they find themselves.

4. The increasing number of foreign students at the Indian Universities also came up for discussion. Amongst the difficulties referred to were the inability of a large number of these students to follow the instruction imparted in the class room, the concentration of these students in certain places, difficulties about accommodation, regular availability of funds from their homes etc. It was recommended to the Government that in order to deal with this problem some kind of a central coordinating agency should be created which should maintain liaison with the universities so as to avoid some of these problems. It was also recommended that a compulsory test be administered to these foreign students to test their linguistic ability before they are admitted to the various courses.

5. The meeting recommended that correspondence education be considerably strengthened, expanded and diversified. Such a policy would encourage even private candidates to make use

of the correspondence channel. The number of private candidates in various universities is substantial. If the correspondence channel could be made more efficient and more easily accessible, private candidates would perhaps find it more satisfying to go through the correspondence channel in so far as it would provide them with guided study.

Varsities : Operational Administrative Costs gobbling funds

The Association of Indian Universities has in a study suggested imposing a levy on professional graduates who migrate to other countries. The study, conducted by Dr. G.D. Sharma, says that this is necessary to reduce the higher cost of subsidised professional education.

The study has also suggested realisation of higher fee for professional courses from students having a well-to-do background.

Administrative and supporting services in the universities gobble up a larger proportion of funds than the teaching and research activities for which they have been set up.

The study says student services, which should receive a much higher proportion of funds than what is currently spent on them, have been declining of late.

Nearly 70 to 80 per cent of the total budget of the universities goes to meeting operational expenses. A third of this spent on teaching services. While only 15 per cent of the overall budget is kept for infrastructural development.

A comparison of cost structures of general and professional universities, however, reveals that the amount spent on teaching inputs in professional universities, is much higher than on administrative and supporting services.

The study suggest that a periodical and internal assessment system be introduced in all the universities since it had been found that the conduct of examinations in the professional universities under such system involves much less expenditure than in others.

According to the study, the university system is not operating at an optimum level because of a lack of detailed educational planning about the feeder sector of the universities and because of pressures from politicians to locate a university in a particular area to serve their interests. Some universities set up under such pressures have failed to develop the right kind of ethos, the study says.

The study estimates that the optimal level of enrolment in a university should be around 3,000 students. Most of the universities, however, have students either above or below this level. The universities can reduce their per unit cost by almost half by operating at an optimal level.

The study says that over the years the university system in the country has acquired a big administrative structure. A thorough probe of the administrative system is needed to see what economies can be effected.

Positional astronomy centre located in Calcutta

India's first Positional Astronomy Centre (PAC) was formally inaugurated in Calcutta. It will provide data on positional and calendarial astronomy. The centre which had been functioning as National Almanac Unit (NAU) since 1945 has now been made independent and named Positional Astronomy Centre, as recommended by Ramanna Committee. It has been placed under the direct control of the Director-General of Meteorology.

Dr P.K. Das, Director-General, Indian Meteorological Department, who inaugurated the Centre, paid a tribute to its founding fathers, the eminent scientists Meghnad Saha and N.C. Lahiri. He stressed the need for close collaboration for progress and innovations. He urged the scientists to work in close accord with the Meteorological Department.

Prof. A.K. Saha, Director of the Shah Institute of Nuclea Physics, Calcutta, who was th chief guest, said that it was absolutely necessary to develop ou own computational methods fo obtaining the basic ephemeride of the sun, moon, planets an the predictions of eclipses an occultations. The first director o the Centre, Mr A. Bandopadhyay tracing the history of events tha led to the establishment of th Centre, pointed out that th centre is the only organisatio in India where all problems pertaining to calendars and perpetua calendars and proposals of worl calendar are referred to.

Challenges to farm scientists

Dr M.S. Swaminathan, Deputy Chairman of the Planning Commission said in Bangalore that the 1980s would pose a challenge to agricultural scientists, especially in India. In his brief speech after being conferred the honorary doctor of science degree by the University of Agricultural Sciences, Bangalore, he said that scientists would have to tackle the problem of feeding the growing human and animal population. He said that another problem which would confront the scientists was unemployment. Ways and means would have to be found to increase the income of the rural poor.

Dr. R. Dwarikanath, Vice-Chancellor of the university while reading the citation said that Dr. Swaminathan, as a leader in agricultural science had developed a methodology for achieving growth with stability of production through programmes like crop cafeteria, mid-season correction in crop scheduling and alternative cropping strategies for different weather conditions in the various parts of the country. This had brought a new hope particularly to farmers of the dryland regions in India where for ages weather alone dictated human destiny.

Many academic posts created in Karnataka

The State Government of Karnataka have approved the creation of twentyeight professors' posts and eightyone readers posts with a separate cadre in the Department of Collegiate Education. The creation of these posts with a separate cadre would cost the State exchequer Rs 81 lakhs a year and ensure better promotional opportunities to the college teachers. The practice of having a common cadre for the college teachers in Collegiate Education Department and the Medical Education Department had limited the promotional prospects of the former. The Education Minister, Mr G.B. Shankar Rao had given an assurance to college teachers on fulfilling their long-standing demand.

The State cabinet also approvved the creation of fifteen posts of Supernumerary Readers in the Collegiate Education Department. While the new professors' posts created would be in the pay scale of Rs. 1,000 to Rs. 1,825, the Readers' posts would be in the pay scale of Rs. 900 to Rs. 1750.

Semester system for Jammu

Jammu University has finalised a scheme for the introduction of semester system as part of the examination reforms. The Academic Council of the University has recommended that the semester system should be introduced in the graduate courses from the academic year 1980-81 and in undergraduate courses from the academic year 1981-82. These recommendations are yet to be considered by the University Syndicate and the University Council at their next meeting. In the meantime preparatory measures are being taken in regard to formulation of courses and syllabi for the under-graduate courses including the proposed honours degree. The Academic Council has also proposed that question banks, an important component of the University Grants Commission's plan for examination reforms, should be developed for the undergraduate including the honours degree. This work will be taken up as soon as the Board of Studies and the Faculties have finalised details of the new course structure and prepared the syllabi for each course under the semester pattern.

The Board of Studies are expected to finalise the detailed syllabi early next month and the development of question banks will be taken up thereafter

The university has already taken a decision to reorganise and restructure courses at the undergraduate level in accordance with the guidelines received from the University Grants Commission for the plus three stage under the new pattern of education. It has also decided that there will be two-year pass degree course after 12 year of schooling. This will be followed by a year of in-depth study for those wanting to take up honours courses. The components of the first degree, it is proposed, should include foundation courses in order to create in every student a great awareness of himself and of the social, cultural and natural environment and core courses to provide the student with a broad exposure to several disciplines and an opportunity to study some chosen subjects in depth and bring him at this stage to frontiers of knowledge in the areas of studies. The postgraduate education will be aimed at specialisation and orientation to research.

It is proposed that there should be a closer relationship between the academic component and the applied component of each subject so that a student could apply his theoretical knowledge to the problems of the region and those confronting him in day-to-day studies, project work and extension.

Hopes & fears of Biosciences

Dr. M.G.P. Stoker, Foreign Secretary and Vice-President of the Royal Society, London, said in Delhi that there was a worldwide fear that science was not being properly used to benefit a sufficiently wide section of the human race. Delivering the third P.M.S. Blackett memorial lecture on 'some hopes and fears in the biosciences', Dr. Stoker said some of the worries and fears and the altered attitudes to science which are apparent in the West were worth consideration not the least because they might be an obstacle to the solution of some of the global problems. A recent poll in several European countries on behalf of the European Economic Community showed that majority in the European countries was deeply concerned about the new science-based technologies, affecting tiny, traffic and drugs. When a similar survey was undertaken two years ago there was no sign of any widespread mistrust of science. Discussing the contributions of biosciences, Dr. Stoker referred to the work of Indian plant geneticists in adapting the high-yielding varieties of rice and wheat to the local environment and said it was one of the great triumphs of India. He added that it was renowned throughout the world and a great example for the future. But modern plant breeding was based on the emergence of the science of genetics and without that branch of biological research the green revolution might never have happened. Dr. Stoker noted that like all discoveries, the contributions of biological science had brought new problems in their wake which now loom over us as threats for the future.

Madras guideline for BE admissions

The Syndicate of Madras University at its meeting held recently in Madras decided to recognise the BA/BSc degrees awarded by the Gandhigram Rural University for purposes of admission to higher courses of study in the Madras University and to allow improvement of performance for the candidates who were admitted to the BGL and BL degree courses at the commencement of academic year 1979-80 in one chance in the examination to be held in April or September, 1980.

The constitution of a separate Board of Studies for the Indian systems of medicines, starting of M.Pharm course in the university from 1980-81 and recognition of the Tamil Department for research leading to Ph.D. were among the other decisions taken at the meeting of the Syndicate. It also laid down the qualifications for admission of candidates to the first year of the four-year B.E. degree course commencing from the academic year 1980-81. Candidates must have passed the higher secondary examination of 10+2 curricula with mathematics, physics and chemistry as three of the four subjects of study under Part III or the higher secondary examination (vocational stream) through engineering and technology or the diploma in engineering examination of the State Board of Technical Examination or an examination of any university or authority accepted by this Syndicate as equivalent.

Farm education needs reorganisation

Dr. A.B. Joshi, Vice Chancellor, Mahatma Phule Krishi Vishwavidyalaya said in Hyderabad that the need for the agricultural universities to develop a technology which will step up substantially the levels of incomes of farmers was badly needed. He was delivering the convocation address at the Andhra Pradesh Agricultural University at Rajendranagar.

Dr. Joshi referred to the estimated foodgrain needs of the human population and the threatened shortages of farm inputs and said that more than increasing and stabilising agricultural production at high levels, "farming has to be made remunerative, cost of production will need to be reduced substantially, there will have to be more crop for every drop of water and for every grain of fertiliser and pesticides used."

Dr. Joshi said that it was "unfortunate" that the "lofty ideals" with which the agricultural Universities in the country were started (namely to achieve, in the whole range of activities of the university, the fullest of functional integration, staffwise and programmewise, of the trinity: education, research and extension education) were not translated into action in many farm universities.

Stating that this does not mean that the Agricultural University system as a whole failed, entirely or even largely, to come up to the expectations that were anticipated from them, he said that it could, however, certainly be said "that things have happened in a far different manner than they might have been." "The aberrations were many and were of a rather serious nature," he added.

Dr. Joshi said that the ICAR (Indian Council of Agricultural Research) had pumped in crores of rupees, more especially since its reorganisation in 1965, for the development of farm universities in each State on sound lines. He referred to the negative attitude adopted by some States and Universities in implementing the projects and programmes of the Council and exhorted the ICAR to "examine if, in their own thinking even at this stage, the time had not come to discontinue or to substantially reduce, financial assistance to recalcitrant States and Universities."

New admission rules for IARI employees

The Indian Agricultural Research Institute has revised the rules governing admission of its employees to the institute's post-graduate school for higher studies. Now the employees of the scientific cadre seeking admission as departmental candidates would be required to proceed on study leave for pursuing higher studies. The technical staff would have to compete with regular open market candidates. The technical staff though not eligible to get admission as departmental students can of course apply for the grant of study leave. They can also take additional leave of the leave due to them for completing the degree requirements.

After the recent separation of the services into research and technical by the Indian Council of Agricultural Research, the body which governs IARI, the activities and function of these two categories have been formulated. In view of this development the situation has changed to the extent that the technical staff are now not included formally as project leaders for being associated in research projects and as such they cannot satisfy

work for research degrees of the same project as they are assigned in the department.

Madurai introduces M. Ed correspondence course

The Madurai Kamaraj University has introduced M.Ed course by correspondence. The course is aimed at developing professional attitudes. research competence and skills. This course is highly practical and students have to be guided personally to have meaningful research experience. They would be encouraged to write the theses and this will entail constant inter-action between the guide, colleagues and staff members. Periodical seminars in the college would also be organised. Doubts have been expressed in a section of academics about the skills and attitudes of those enrolling for the correspondence course and they feel that the correspondence course in this area would lower the M.Ed. standards and impair educational research and guidance.

ICMR widens research base to combat cancer

The Indian Council of Medical Research is evolving a national strategy to combat cancer. This follows the choice of the South Asian region by the World Health Organisation for developing and strengthening cancer control programmes at the national level. The strategy seeks to lay emphasis on research in the field of cancer detection and improving the treatment schedules. No systematic survey has been done so far in the country to assess the exact incidence of cancer, but the limited data available from the Bombay Cancer Registry has indicated that cancer takes a toll of nearly five lakhs a year. The ICMR advisory committee which met recently felt that the existing cancer registries in the country should be further strengthened and at least three more such registries covering different regions should be established. The ICMR has proposed to widen the base of research by involving medical colleges and research institutions in its programmes.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

Mathematics

1. Dwivedi, Bashishtha Dhar. Some investigations in the differential geometry of Finsler and areal spaces. University of Gorakhpur.

2. Krishna Murthy, M. Magnetohydrodynamic dusty viscous flows. Sri Venkateswara University.

3. Mohammad Thajuddin. Some problems of wave motion in porous elastic solids. Kakatiya University.

4. Mohan, R.N. Some problems in construction of combinatorial Designs. Vikram University.

5. Nageswara Rao, P. Problems in thermo-viscous fluid dynamics. Kakatiya University.

6. Pathak, Ashutosh. A study of expansion problems in Banach spaces. Vikram University.

7. Pawar, Purnima Laxmanrao. Certain problems in approximation theory and summability theory. University of Jabalpur.

8. Sharma, Sushil Kumar. A study in the absolute summability of Legendre series. Vikram University.

9. Somaraju, Pulugurtha. Spectrum of a class of non stationary processes and some ergodic theorems. Andhra University.

Physics

1. Bhatnagar, Prem Swarup. Study of square corrugated waveguide and horn antennas. Vikram University.

2. Bhattacharyya, Ajoy Kumar. On some problems of analog and digital phase locked loops. University of Burdwan.

3. Chattopadhyay, Milan Kumar. Some aspects of double electron ejection in the photo-absorption process. University of Burdwan.

4. Chaudhari, Puran Singh. Luminescence studies of some co-precipitated ZnS phosphors. Vikram University.

5. Gogoi, Someswar. Dielectric properties and conduction phenomena in vacuum deposited films of some II-VI compounds. Dibrugarh University.

6. Jain, S.K. Strength of solids under deforming forces. University of Jabalpur.

7. Kanagala, Rama Mohan Rao Subba Rao. Studies in rotationally symmetric turbulence with anisotropy and magnetohydrodynamic turbulence. Marathwada University.

8. Kandpal, Mohan Chandra. Mossbauer effect studies in some liquid crystals. University of Delhi.

9. Kanik Ram. Spectroscopic studies of some aromatic N-heterocyclic compounds. University of Gorakhpur.

10. Mozumder, Atish. Study of the γ—N and the γ—N nucleus interactions at 50 Gev in nuclear emulsion. University of Delhi.

11. Sapre, Ashok Kumar. Role of nuclei of galaxies and quasi-stellar objects in the evolution of galaxies. Ravishankar University.

12. Sarmah, Nirendra Chandra. Interacting bosons and properties of liquid helium at very low temperatures. Dibrugarh University.

13. Tewari, B.N. Infrared and ultraviolet absorption spectra of some benzene derivatives. University of Gorakhpur.

14. Thimma Naidu, G. Spectroscopic studies on certain diatomic molecules. Sri Venkateswara University.

15. Veerabhadra Rao, D. Studies in automatic lens design methods. Kakatiya University.

Chemistry

1. Borthakur, Baleen. Chemical investigation on certain medicinal plants of Assam with special reference to olefinic acids. Gauhati University.

2. Chandhok, Shiv Mohan. Structural studies on the constituents of some Indian medicinal plants. University of Jabalpur.

3. Chattopadhyay, Lina. Naturally occurring heterocyclic compounds. University of Calcutta.

4. Das, Shonit Ranjan. Studies on 3-hydroxyanhydrorational. Gauhati University.

5. Desai, N.V. Development of composite membrane for the reverse osmosis process. Saurashtra University.

6. Deshmukh, Prabhakar Sankarrao. Studies of substitution effect and thermodynamics of some thallium (I) complexes. Vikram University.

7. Dey, N.C. Flow characteristics of dilute polymer solutions in unconsolidated porous media. I.S.M., Dhanbad.

8. Dwivedi, Karunesh Dhar. Chemistry of eutectics. University of Gorakhpur.

9. Goel, Subhash Chander. Alkenoxide derivatives of various elements. University of Delhi.

10. Gupta, Ram Murat. Studies on polyphosphates and their derivatives. University of Gorakhpur.

11. Hanumantha Rao, Kota. Studies on the oxidation of some organic compounds by peroxydisulphate. University of Jabalpur.

12. Hari, Subhash Chander. Preparation and characterisation of some new organometallic compounds of molybdenum (VI). University of Delhi.

13. Jaiswal, Paramjit Singh. Covalency and magnetic properties of low symmetry paramagnetic compounds. University of Delhi

14. Kapoor, Rakesh. Anodic oxide films on valve metals. Maharshi Dayanand University.

15. Krishan Chander. Statistical thermodynamics of binary mixtures of non-electrolytes. Maharshi Dayanand University.

16. Kundu, Samar Kumar. Studies on glycosphingolipid: Structure and organic molecules of potential interest. University of Calcutta.

17. Mani, Raghupati. Studies on co-frequencies and co-force constants in group VI metal carbonyls and their derivatives. University of Gorakhpur.

18. Maru, Paraschandra. Studies on some metal hydroxamates and their analytical applications. Vikram University.

19. Mukhopadhyay, Prasantakumar. Studies on ion exchange equilibria of some cations on Amberlite IR-120. University of Calcutta.

20. Muktibodh, Suresh Basant. Organic analytical reagents. Vikram University.

21. Prabhakara, R. A study of geometrical isomerism in some unsaturated sulphide-sulphones and disulphones. Sri Venkateswara University.

22. Ram Shabd. Thermodynamic studies on electrokinetic phenomena. University of Gorakhpur.

23. Ray, Naminath. Microbiological transformation of steroids. University of Calcutta.

24. Shiv Saran Das. Thermodynamic properties of ternary liquid mixtures. University of Gorakhpur.

25. Singh, Radhey Shyam. Kinetics and mechanisms of oxidation of sugar by Cu(II) in reference to ammonium hydroxide. University of Gorakhpur.

26. Thakar, Shreeram Bhaskar. Studies on the synthesis of heterocyclic compounds. Karnatak University.

27. Trivedi, T.B. Evaluation of thermodynamic parameters (functions) of solutions. Saurashtra University.

28. Vohra, Neelam. Complexes of hapach & E-2 hydroxy-3-methyl (-2-butenyl)—1-4 naphthaquinone. Garhwal University.

Engineering & Technology

1. Jakkiwar, Madhukar Shankar. Utilisation of Vanadiferous titano-magnetite from Khursipar, Dist. Bhandara, Maharashtra. Nagpur University.

Earth Sciences

1. Das, Pradip Kumar. Geology of the tertiary formations in and around Kimini of Subansri District, Arunachal (N.E.F.A.). Himalaya. Gauhati University.

2. Rakesh Kumar. Development of some interpretation techniques in direct current resistivity methods. I.S.M., Dhanbad.

3. Venkataraman, Challagundla. Geology of the precambrian rocks of Podili and Darsi areas, Andhra Pradesh with reference to groundwater quality. Andhra University.

BIOLOGICAL SCIENCES

Anthropology

1. Chengal Reddy, P. Population structure and genetic variation of Malas of Chittoor District, Andhra Pradesh. Sri Venkateswara University.

Biochemistry

1. Chattopadhyay, Jyotiprakas. Control of fungal infections by antifungal antibiotics. University of Calcutta.

2. Das, Saroj Kanti. Lipids and lipolytic enzymes of Trichiphyton rubrum. University of Calcutta.

3. Pal, Basudeb. Effect of potassium on nitrogen metabolism with special reference to urea production. University of Calcutta.

4. Raychaudhuri, Malaykanti. Chemical and biochemical studies on penicillin and its producer organism penicillium chrysogenum and studies on Halobacterium. University of Calcutta.

5. Saha, Samir Kumar. Studies on pesticides and their metabolites with special reference to ethyl parathion. University of Calcutta.

Microbiology

1. Walia, Satish Kumar. Plasmid studies in Klebsiella pneumoniae. Maharashi Dayanand University.

Botany

1. Agarwal, Anuradha. Studies on the host parasite interaction in Curvularia rot of citrus fruits. University of Jabalpur.

2. Bhattacharyya, Sabita. Studies on mutation and transformation in Spirillum lipoferum. University of Calcutta.

3. Biswas, Arun Kumar. Studies on the mechanism of senescenee in rice Oryza sativa L. CV Jaya: Hormonal and nutritional control of the process and its influence on yield. University of Burdwan.

4. Chakraborty, Arabinda. Studies on X-ray irradiated mature and developing embryos of rice. University of Burdwan.

5. Damodaram Naidu, V. Factors influencing the virulence of Xanthomonas oxyzae the incitant of bacterial blight of rice. Utkal University.

6. Davinder Kaur. Morphological, embryological and anatomical studies in the family Araucariaceae: I Agathis robusta (C. Moore) F.M. Bailey II. Araucaria cunninghami Ait ex Lamb. University of Delhi.

7. De, Asit Baran. Anatimical and cultural studies on some Indian Polyporaceae in relation to their taxonomy. University of Burdwan.

8. Dutta, Amal Kumar. Studies on some qualitative and quantitative aspects of foliar histology. Visva Bharati.

9. Dutta, Roma. Studies on (1) Chromosomes as an aid in the interpretation of affinities, phylogeny and evolution; and (2) Response of cell nuclei to hormone treatments. Visva Bharati.

10. Ghosh, Kantishree. Studies on the host parasite interaction in collectotrichum rot of citrus fruits. University of Jabalpur.

11. Ghosh, Kasinath. Allelopathic potential of two species of Chenopodium Linn. University of Calcutta.

12. Giri, Gowda, P. Cytogenetical studies in bougainvillea. Karnatak University.

13. Joshi, A.J. Physiological studies on some halophytes Saurashtra University.

14. Pal, Balaram. Biology of Fusarium graminearum Schw with special reference to biochemical deteriorati on in malformed tissues of gardenia and control of the disease. University of Burdwan.

15. Patil, Bikasranjan. Studies on the phyllosphere of crop plants. University of Calcutta.

16. Rawal, Shuban Kishen. Some physiological aspects of growth and differentiation in diploid and haploid tobacco tissues grown in culture. M.S. University of Baroda.

17. Sharma, Ranjana. Studies on the microfungal population on the leaf surface of crotalaria juncea L. University of Delhi.

18. Singh, K.N. Studies on combining ability and heterosis breeding in barley. University of Gorakhpur.

19. Srivastava, Kanchan Lata. Studies on mucorale. University of Gorakhpur.

20. Subbarami Reddy, Kanjula Venkata. Blue-green algae of some cultivated fields of Vidarbha. Nagpur University.

Zoology

1. Adhaulia, Upkar Narayan. Studies on hydrobiology of River Betwa and its fishery resources. Vikram University.

2. Bandyopadhyay, Sibdas. Basal laminar glycosaminoglycan in epithellia morphogenesis. University of Calcutta.

3. Devendra Kumar. A comparative study of the copulatory apparatus and genital muscles in the males of Phytophaga. Ravishankar University.

4. Hussaini, Syed Abdul Majid. Studies on development of bioassays of pesticide residues in food storage. Kakatiya University.

5. Naik, Amrit Lal. Development and morphology of skull in relation to latero system in Barbustor. Ravishankar University.

6. Narasimha Reddy, M. Subcellular electro-migratory studies in relation to denervation atrophy in amphibian skeletal muscle. Sri Venkateswara University.

7. Rao, K.M. Study on the structure and post-embryonic development of reproductive organs in certain insects. Vikram University.

8. Rathore, Hemant Singh. Study on the influence of various factors on puffing in dipteran giant chromosomes. Vikram University.

9. Sawhney, R. A study on the anatomy of the Indian squirrel, Funambulus palmarum. University of Jabalpur.

10. Subrahmanyam, Muthangi Veera Venkata. Ultrastructure and ecophysiology of fresh water field crab, Oziotelphusa senex senex adapted to higher salinity. Andhra University.

11. Tilak, Kolluru Samba Siva. Studies on the presistence of carbaryl in the environment and its effect on fresh water fish. Andhra University.

12. Viswanathan Iyer, Seethalakshmi. Studies on some parasitic Protozoa from some invertebrates. Marathwada University.

Medical Sciences

1. Agarwal, B.K. Hormonal activation and inactivation for some enzymes of the reproductive tract. University of Jabalpur.

Agriculture

1. Arora, Aneeta. Responses of cultured cell-lines and whole plants to salt stress in wheat. Haryana Agricultural University.

2. Chakrabarti, Gurudas. Studies on water stable aggregates and their interaction with other associated properties of some soil groups of West Bengal. University of Calcutta.

3. Mukhi, Anil Kumar. Zinc availability under the salt affected and waterlogged soil conditions. Haryana Agricultural University.

4. Nageswara Rao, Amirineni. An economic analysis of distribution and marketing of pesticides in Andhra Pradesh. Haryana Agricultural University.

Veterinary Science

1. Gupta, Lajpat Rai. Effect of certain feeding practices on performance of old and young Murrah Buffaloes. Haryana Agricultural University.

2. Kalra, Sunil. Genetic studies on some important pelt characteristics in Karakul sheep and its crosses. Haryana Agricultural University.

3. Yoginder Kumar. A study on Salmonella enterotoxin. Haryana Agricultural University.

Additions to AIU Library

Aggarwal, J.C. *Recent educational developments in world.* Delhi, Arya, 1971. xi, 248p.

Ariyadasa, K.D. *Management of educational reforms in Sri Lanka.* Paris, Unesco, 1976. 41p.

Cantor, Leonard Martin and Roberts, Iolo Francis. *Further education today : A critical review.* London, Routledge and Kegan Paul, 1979, viii, 255p.

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Dasen, Pierre. *Piagetian psychology : Cross-cultural contributions.* Delhi, Wiley Eastern, 1977. xiv, 379p.

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Fromm, Erich. *Anatomy of human destructiveness.* London, Penguin (c 1973) 679p.

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Gupta, Anand P. *Fiscal policy for employment generation in India.* Delhi, Tata McGraw-Hill (c 1977) xiv, 142p.

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Jentz, Barry C. and Wofford, Joan W. *Leadership and learning : Personal change in a professional setting.* New York, McGraw-Hill, 1979. xiv, 181p.

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Pace, R. Wayne and others. *Techniques for effective communication.* Massachusetts, Addison-Wesley (c 1979) sv, 329p.

Parmaji, S. *Education and jobs.* Delhi, Leeladevi Pub., 1979. 118p.

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Raghavaiah, Y. and Reddy, N.Y. *Contemporary issues in higher education.* Hyderabad, Osmania University, 1979, ix, 156p.

Rice, F. Philip. *Adolescent : Development, relationships and culture.* Boston, Allyn and Bacon, 1978. xix, 7140p.

Ross, Alan O. *Learning disability : The unrealized potential.* New York, McGraw-Hill (c 1977) xvii, 202p.

Saini, Shiv Kumar. *Development of education in India : Socio-economic and political perspectives.* Delhi, Cosmo Pub., 1980. xix, 428p.

Scudder, F.V.A. *Defence studies as an academic discipline.* Madras, University of Madras, 1977, vi, 16p.

Seetharamu, A.S. *Education and rural development.* Delhi Ashish Publishing House, 1980. 303p.

Sharma, Narinder Kumar. *Linguistic and educational aspirations under a colonial system : A study of Sanskrit education during the British rule in India.* Delhi, Concept, 1976. xiii, 242p.

Unesco. Social Science Documentation Centre. *World directory of social science institutions: Research, advanced training, documentation, professional bodies.* Paris, Author, 1977. xi, 262p.

Venugopal, A. *Postgraduate institute of basic medical sciences,* Madras, University of Madras, 1977. iv, 26p.

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Distance Education

(*Continued from page 267*)

instructions, independent learning and informal education through new media is a dire necessity of the day. It is in this context that the developing countries are now committed to providing correspondence courses. That is why today more than one crore students are studying in the various countries of the world only through the correspondence courses. We have made a humble beginning in India.

7, Films, Radio, Televisions, open libraries, programmes instructions and educational technology are the modern mass-media of transmission of education. To this we must add the correspondence courses in which we may use especially prepared correspondence lessons and contact programmes. Here I would make a new suggestions in making the correspondence educational programmes more scccessful :

1. The present styles of lessons may be made more stimulating, motivating, interesting and easy to grasp. I have myself prepared correspondence lessons of Delhi University according to a set pattern prescribed by the University. But I am not satisfied with that.
2 All the easily obtainable mass-media such as Radio, Television and Films (which can be sent to different centres) may be included in the Methodology.
3. Many of the lessons may be got prepared on the pattern of Programmed Instructions which have a special feature of combining subject matter and assignment, learning and evaluation as well as reading and thinking.
4. During the contact programmes, special time may be devoted to the oral discussions and oral testing work in which each student will get the opportunity of expressing orally what he has studied and discussing the subject matter with the tutors.

8. The correspondence centres in various parts of the country could provide the teaching machines for purposes of self-instructions. I would suggest that the Universities get a handsome grant from the U.G.C. or the Central Ministry for conducting research in educational technology and preparing programmed instructions and teaching machines for the use of the correspondence courses. ☐

INDIAN INSTITUTE OF TECHNOLOGY

KHARAGPUR

Advertisement No. R/2/80
Dated 11th April, '80.

Applications are invited for the undermentioned posts at the Indian Institute of Technology, Kharagpur, West Bengal :—

POSTS:

I. PROFESSORS

Scale of Pay : Rs. 1500-60-1800-100-2000-125/2-2500/- plus D.A. as admissible.

Age : Preferably below 50 years.

Qualifications : **Essential**

- (i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree.
- (ii) Twelve years' experience in the field of specialisation prescribed, of which at least 5 years should be in teaching and/or research.
- (iii) Published research work of good quality in Journals of repute.
- (iv) Experience in guiding research.

Desirable:

- (i) Experience of teaching post-graduate classes,
- (ii) Good design and/or industrial experience.

N.B. If a person is not found suitable for the post of Professor, he may be offered the post of Associate Professor in the grade of Rs. 1500-2000/-

Vacancies & Specialisations:

(i) **Aeronautical Engineering Department** (Two Posts)

Specialisation:

One Post: Aircraft Design and the other post: Aircraft Propulsion.

(ii) **Chemistry Department** (One post)

Specialisation in one or more of the following;

Organic/Inorganic/Physical/Applied Chemistry.

(iii) **Electrical Engineering Department** (One post)

Specialisation in one or more of the following:

(a) Electrical Machines and Drives (b) Power System Engineering (c) Control System Engineering (d) Instrumentation

(iv) **Industrial Management Centre** (One post)

Specialisation in one or more of the following:

(a) Maintenance Engineering (b) Industrial Dynamics (c) Personnel Management and Industrial Relations (d) Industrial Management.

(v) **Mathematics Department** (One post)

Specialisation in any of the following:

(a) Statistics (b) Operations Research (c) Fluid Mechanics (d) Numerical Analysis (e) Computer Science.

(vi) **Mechanical Engineering** (One post)

Specialisation in one or more of the following:

(a) Production Engineering (b) Thermal Science (c) Solid Mechanics (d) Mechanical Handling of Materials.

(vii) **Metallurgical Engineering Department** (One post)

Specialisation in any of the following:

(a) Corrosion (b) Physical (c) Non-ferrous extractive and (d) Metal casting and solidification.

(viii) **Naval Architecture** (One post)

Specialisation in one or more of the following:

(a) Ship Structures (b) Ship Machinery (c) Naval Architectural aspects of Ocean Engineering.

(ix) **Physics Department** (Three posts)

One post in each of the following specialisations:

- (a) **Mathematical State Physics** —Preferably in quantum mechanics and relativity with applications to semi-conductor physics.
- (b) **Theoretical Solid State Physics** Preferably Lattice vibrations and thermo-dynamical properties of solids.
- (c) **Experimental Solid State Physics**—Preferably crystal growth, crystal optics, thin film physics etc.

(Those who applied against Advertisement No. R/1/79 need not apply again)

II. ASSISTANT PROFESSORS

Scale of Pay: Rs. 1200-50-1300-60-1900/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

Qualifications: **Essential**

- (i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree.
- (ii) Seven years' experience in the field of specialisation prescribed, of which at least 2 years should be in teaching and/or research.

Desirable

- (i) Published research work of good standard.
- (ii) Experience in guiding research.

Vacancies & Specialisations:

(i) **Agricultural Engineering Department** (One post)

Specialisation in one or more of the following:

(a) Farm Power and Machinery (b) Soil and Water Conservation Engineering (c) Dairy and Food Engineering (d) Applied Botany (e) Soil Technology (f) Agronomy.

(ii) **Electrical Engineering Department** (Four posts)

Specialisation in one or more of the following:

(a) Electrical Machines and Drives (b) Power System Engineering (c) Control System Engineering (d) Instrumentation.

(iii) **Humanities Department** (One post)

Specialisation in any of the following:

(a) Economics (managerial, industrial or labour) (b) Psychology (educational, industrial or social).

(iv) **Industrial Management Centre** (One post)

Specialisation in one or more of the following:

(a) Maintenance Engineering (b) Industrial Dynamics (c) Financial Management (d) Marketing Management.

(iv) **Mechanical Engineering Department** (Two posts)

Specialisation in one or more of the following:

(a) Solid Mechanics (b) Fluid Mechanics & Fluid Machinery (c) Mechanical Handling of Material (d) Instrumentation (e) Heat & Mass Transfer (f) Combustion (g) I.C. Engines (h) Metal Forming (i) Manufacturing Processes.

(v) **Metallurgical Engg. Department** (Two posts)

Specialisation in any of the following:

(a) Foundry (b) Mechanical Metallurgy.

(vi) **Mining Engineering Department** (Four posts)

Specialisation in one or more of the following:

(a) Mining Engineering (b) Mine Surveying (c) Mining Machinery (d) Mechanisation.

For the specialisation in Mining Machinery/Mechanisation Degree holders in Mechanical Engg. may also apply.

(vii) **Chemical Engineering Department** (One post)

Specialisation in any of the following:

(a) Petroleum Refinery Engineering (b) Biochemical Engineering with a Ph.D. degree in Chemical Engineering.

III. ASSISTANT PROFESSOR (LIAISON OFFICER)—

Industrial Consultancy Centre—One temporary post of 2 years' duration in the first instance, but likely to continue.

Scale of Pay: Rs. 1200-50-1300-60-1900/- plus D.A. as admissible.

Age: Preferably between 30 and 45 years.

The qualifications for this post are as stated above for the post of Assistant Professor (in any branch of engineering or technology).

The person recruited shall assist the Dean of Sponsored Research & Consultancy in organising the Industrial Consultancy Centre of the Institute. He will also be the Liaison Officer between the industries of the region and the Institute with a view to promoting consultancy activities.

(Those who applied against Advertisement No. R/10/79 need not apply again).

V. LECTURERS

Scale of Pay: Rs. 700-40-1100-50-1600/- plus D. A. as admissible.

Age :Preferably between 25 and 38 years.

Qualifications: Essential

(i) A good academic record with a Master's degree in the appropriate branch.

(ii) Two years' professional experience.

Desirable : A doctorate degree.

Vacancies & Specialisation:

(i) **Aeronautical Engineering Department** (One post)

Specialisation in one or more of the following:

Aerodynamics or Aircraft Design.

(ii) **Agricultural Engineering Department** (One post)

Specialisation in one or more of the following:

(a) Dairy Engineering, (b) Food Engineering, (c) Dairy Technology, (d) Food Technology.

(iii) **Chemical Engineering Department** (One post)

M. Tech. Degree in Petroleum Refinery Engineering and/or experience in Petroleum Refineries after a Master Degree in Chemical Engineering.

(iv) **Electrical Engineering Department** (One post)

Specialisation in one or more of the following:

(a) Electrical Machines and Drives (b) Power System Engineering (c) Control System Engineering (d) Instrumentation.

(v) **Humanities Department** (One post)

Specialisation in French

(vi) **Naval Architecture Department** (Three posts)

Specialisation in one or more of the following:

(a) Ship Design (b) Shipbuilding Technology (c) Ship Structure (d) Ship Machinery (e) Naval architectural aspects of ocean engineering.

(vii) **Physics** (1 post)

Specialisation in one or more of the following:

(i) X-rays & Structure of matter (ii) Experimental Solid State Physics (iii) Nuclear Physics (iv) Instrumentation involving LASERS, X-Rays, electron optics etc.

Note: The following are applicable to Posts of Professors, Assistant Professors and Lecturers;

(a) In all cases experience means experience gained after obtaining the Master's degree.

(b) For the posts of Industrial Management Centre, Mining Engg & Naval Arch. Depts. if suitable candidates with prescribed essential qualifications are not available then the minimum educational requirements may be relaxed.

(c) Relaxation of the minimum educational requirements may also be done in the case of candidates having outstanding research achievements or long and meritorious industrial design experience.

V. ASSISTANT ENGINEER

(Mechanical)—One post

Scale of pay: Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Age: Not less than 30 years.

Qualifications & Experience: Essential

(a) A graduate in Mechanical Engineering or equivalent.

(b) A minimum of 3 years experience in the maintenance and operation of refrigeration and air-conditioning plants, room air-conditioners and water coolers.

Desirable:

(a) Experience of maintenance and servicing of petrol and diesel driven vehicles.

(Those who applied against Advertisement No. R/10/79 need not apply again).

VI. ASSISTANT ENGINEER

(Horticulture & Sanitation)—One post

(The post is reserved for ST candidates. General candidates are also eligible to apply. The general candidates will be considered if no suitable ST candidates are available for appointment to the vacancy).

Scale of Pay: Rs. 650-30-740-35-810 EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Qualifications: Essential

(a) A graduate in Public Health Engineering or Civil Engineering with about 3 years of relevant experience in the field of sanitation.

or (b) A three-year diploma in Public Health Engineering or Civil Engineering with about 7 years relevant experience in the field of sanitation.

Desirable

Some experience in the field of Horticulture.

Job Requirements

(i) Able to prepare estimates, design and supervise Civil construction works in sanitary works and water works and able to organise and supervise municipal services like sewage systems, garbage clearance, water systems, mosquito control road maintenance and Horticultural works etc.

(ii) Able to handle the horticultural and sanitation (malees and sweepers) staff and organise municipal services, including handling and maintenance of stores.

(iii) Any other works as may be assigned by his superior in-charge or the Director.

Application forms may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23 cm x 10 cm. Applications accompanied with an application fee (non-refundable) of Rs 7.50 (Rs. 1.87 for SC/ST candidates) payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur, at Kharagpur-2 post office should reach the Registrar, IIT, Kharagpur by **the 31st May 1980.**

Applicants who are in the employment of Government/Semi-Government organisations or of any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Advertisement No. 15/80

Applications are invited for 15 posts of Research Engineers 'B' and 'A' in the Advanced Centre for Electronic Systems of the Electrical Engineering Department in the following scales:

Research Engineer 'B' : Rs. 1100-50-1600

Research Engineer 'A' : Rs. 700-40-900-EB-40-1100-50-1300.

The selected candidates will be working on sponsored research and development projects, assigned to them from time to time. Presently, the Centre is engaged in projects in the areas of fibre optics communication, radar clutter, ELF Communication, Digital Signal and Image processing, Lasers and Lasers Systems, High precision Instrumentation for signal averaging and microprocessor-based signal processing, special semi-conductor device development and computer aided design. These projects are currently sponsored by Ministry of Defence, DST and Electronics Commission.

(a) **Qualifications : Essential**

The applicants must have First Class Bachelor's degree in Electrical Engineering with good academic record and specialisation in any of the following areas of Electronics and Communication :

(i) Design of digital subsystems and interface to computers; Microprocessor and related software.

(ii) Electronic circuit design—digital, linear and RF.

(iii) Radar signal processing.

(b) **Desirable**:

A Master's degree in Electrical Engineering with specialisation in Electronics and Communication shall be preferred.

The requirement of First Class in Bachelor's degree may be relaxed for candidates possessing exceptionally good experience in the areas of specialisation.

Depending on their qualifications and experience, the selected candidates may be offered any of the two positions, mentioned above.

The posts are contractual for an initial period of three years which may further be extended by another three years. Research Engineers after satisfactory completion of six years of continuous contractual service would become eligible for consideration for permanent positions of research engineers in the Institute.

Residential housing, when available, is provided on the Campus. The Campus facilities include primary and higher secondary schools, a health centre and a shopping centre.

All the appointments will be on contract. Besides pay, posts carry allowances according to Institute rules which at present correspond to those admissible to Central Government employees stationed at Kanpur. Higher initial pay is admissible to specially qualified and deserving candidates. Candidates called for interview will be paid second class railway fare for travel inside India from the place of duty to Kanpur and back by the shortest route.

In the category of Research Engineer 'A' one post will be reserved for SC/ST candidates. In the event of non-availability of SC/ST candidate, the reserved post would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable/free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm x 10 cm size. Applications should be accompanied by a postal order for Rs. 7.50 (Re. 1.87 for SC/ST candidates).

Applicants who are employed in a Government/Semi-Government organisation or Institute, should send their applications through proper channel, else they will be required to produce a 'No Objection' certificate from their employers at the time of interview.

Persons abroad may apply on plain paper (three copies) including an account of their academic and professional records and reprints of publications, fields of specialisation etc. They should also give names of atleast three persons who are intimately acquainted with their academic activities and from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, I.I.T. Post Office, Kanpur-208016 on or before **June 10, 1980**.

JAMIA MILLIA ISLAMIA

Jamia Nagar, New Delhi-110025

Advertisement No. 1/80-81

Applications on the prescribed form which can be had from the Registrar's Office on any day (except Sundays and Holidays) between 10.00 a.m to 12.00 Noon or by sending a self addressed and duly stamped (30 paise) envelope of 10 x 23 cms., are invited along with the crossed postal order or Bank Draft of Rs. 3/- for the following posts so as to reach the Registrar by 1.00 p.m. on 7-6-1980.

Ability to teach in Urdu and Hindi is a desirable qualification for teaching posts and knowledge of Urdu and Hindi is essential for non-teaching posts.

D.A., C.C.A., H.R.A., P.F., Gratuity, Pension etc. and such other benefits will be given according to Jamia rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

Four Lecturers (Grade: Rs. 700-1600) one each in Social Work, English (permanent), Sociology and Physics (leave vacancies).

(a) A Doctor's degree or research work of an equally high standard in the relevant subject; and

(b) Consistently good academic record with 1st or high 2nd class Master's degree in the relevant subject or an equivalent degree of a foreign university.

For the posts of lecturer in Social Work and Sociology experience in teaching/training in Applied Social Sciences projects would be a desirable qualification.

Four Lecturers in Education (Grade: Rs. 700-1600) one each in Experimental Education, Geography (permanent) Civics and Mathematics (leave vacancies).

(a) A Doctors' degree in Education or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class Master's degree in the relevant subject or an equivalent degree of a foreign university.

OR

(a) A Doctors' degree in the relevant subject or research work of an equally high standard; and

(b) Consistently good academic record with an M.Phil degree in Education or an equivalent degree of a foreign university.

For the post of Lecturer in Experimental Education the candidates should have Master's degree in Education with specialisation in Experimental Education or Master's degree in Psychology with specialisation in experimental psychology.

For the post of Lecturer in Mathematics candidates should have Master's degree in Education with specialisation in Teacher Education and/or research methodology and educational statistics. Preference will be given to candidates with an additional Master's degree in Sociology, Philosophy or Economics.

For the post of Lecturer in Education (Geography) specialisation in Advanced Cartographic and/or Quantitative techniques at M.A. level and for the post of Lecturer in Education (Civics) proficiency to teach Civics, as well as History or Sociology to B. Ed. students will be a desirable qualification.

One Lecturer in Art Education (Grade: Rs. 700-1600)—Temporary likely to be made permanent.

Essential:

(i) At least high Second Class Higher Secondary or its equivalent. (ii) At least high Second Class Diploma in Fine Arts of 4 or 5 years duration from a recognised Art Institution or its equivalent.

Desirable:

(i) At least two years teaching experience preferably in History of Art and Art Appreciation to graduate/under-graduate students. (ii) At least high Second Class B. Ed. (Art) or equivalent Professional training. (iii) Professional standing as an artist with one-man shows and participaton in National and International exhibitions.

One Registrar: (Grade: Rs. 1100-1600) (likely to be declared at par with the Registrars of other Central Universities) (permanent).

Essential:

A second class Master's degree and experience of educational administration at the Executive level for at least 8 years. Proficiency in noting and drafting in Urdu and English.

Desirable:

(i) Experience of University administration and familiarity with the working of University bodies and institutions including admission, college administration, accounts rules relating to fixation of pay, inspection of reports etc. (ii) Knowledge of Hindi.

One Secretary to Shaikhul Jamia (Vice-Chancellor) (Inter-changeable with Asst. Registrars) Grade : Rs. 700-1600.

Essential:

A second class graduate with at least 10 years' experience of working in an academic institution/Govt. Office/Public Sector undertaking/Statutory Body of which 5 years must be as personal Assistant to a senior officer. Proficiency in noting and drafting in Urdu and English.

Desirable:

Knowledge of Hindi.

Two Professional Juniors (Grade: Rs. 700-1300) (Permanent).

(a) Second Class M.A./M.Sc./M.Com degree and second class B. Lib. Sc. degree.

OR

Second class B.A./B.Sc./B.Com. degree and second class M.Lib.Sc. degree.

(b) At least 2 years experience in a professional capacity in an established Library.

Five Professional Assistant (Grade: Rs. 550-900) (Permanent). One reserved for Scheduled Caste/Tribe subject to availability.

Second Class B.A./B.Sc./B.Com. degree and second class B.Lib.Sc. degree with 2 years' experience of working in an established Library.

One P.G.T. in History (Grade: Rs. 550-900) (leave vacancy).

(i) Masters degree of a recognised University in the subject concerned. (ii) University Degree or Diploma in teaching OR 3 years teaching experience in a college OR 7 years teaching experience in a High or Higher Secondary School.

One T.G.T. Commerce (Grade : Rs. 440-750) (permanent).

Essential:

(i) At least second class graduate degree in Commerce of a recognised University. (ii) A University degree/diploma in teaching.

Desirable:

(i) Shorthand & typing in High School and Intermediate/Higher Secondary School as a subject of study or a certificate in Shorthand and typing (ii) At least two years experience in Teaching Middle/High School classes of a High/Higher Secondary School.

One Teacher in Hindi and Hindu Ethics—(Grade : Rs. 550-900) (Permanent). Faculty of Humanities & Sciences.

(i) M.A. in the subject concerned. (ii) B.T. or (iii) 3 years teaching experience in college classes or (iv) 7 years teaching experience in Schools.

Two T.G.T. (Grade: Rs. 440-750) one each in Islamiat and Agriculture (permanent).

Essential:

(i) At least second class degree of a recognised university in the subject concerned. (ii) A University degree/diploma in teaching

Desirable:

At least two years experience in teaching Middle/High classes of a High/Hr. Sec. Schools.

S.H. Naqvi
OSD/OFFG. REGISTRAR

UNIVERSITY OF RAJASTHAN

JAIPUR

Advertisement No. 11/80

Applications are invited (through proper channel in case of those already in employment) so as to reach this office on or before **10th June, 1980** in the prescribed form available from the Registrar's office on pre-payment of Rs. 4/- (Rs. 3/- extra in case required by post) for the undermentioned posts :—

(1) **Registrar**—1-(Rs. 1400-50-1650-60-1830-70-1900)

Essential Qualifications:

(i) Atleast a second class Post-graduate degree and (ii) at least ten years administrative experience in a position involving supervision, control and planning or at-least ten years of teaching at the University level with adequate knowledge and experience of educational research, planning and administration.

Desirable Qualifications:

(i) Familiarity with the life and working of a University or with the educational administration in a College' University or an institute of higher learning or research, (ii) Experience of teaching in a college or a University and (iii) A degree or a Diploma in Management.

Note:

Persons already working in the University on the post of the Dy. Registrar or on an equivalent administrative post and possessing at least a Bachelor's degree could be considered for the post provided that such persons possess a minimum of 10 years experience as Deputy Registrar or on an equivalent post.

(2) **Controller of Examinations**: (Rs. 1250-50-1700).

Essential Qualifications:

(i Atleast a second class Post-graduate degree and (ii) Atleast 10 years experience of conducting University examinations and other allied work at the executive level and having record justifying entrusting of confidential work or atleast 10 years administrative experience in a position involving supervision, control and planning.

Desirable:

Experience of University administration and familiarity with the working of University Bodies and Institutions.

Note:

Persons already working in the University and who do not possess Post-graduate degree but are graduates, be considered for the post provided that such persons possess a minimum total administrative experience of 10 years of working as Dy. Registrar and or Asstt. Registrar.

(3) **Public Relation Officer**—1 (Rs. 750-30-1020-40-1300-50-1350.).

Essential Qualifications:

(i) Atleast a second class post-graduate degree, (ii) Atleast a second class Bachelor's degree or Diploma in Journalism from a recognised University/National Institute, and (iii) Good experience of drafting in Hindi and English.

Desirable qualifications:

Atleast two years practical experience of working in a Newspaper of National/State Level standard or of working in Central/State Public Relations Office as Journalist, sub-Editor, Reporter or Assistant Public Relation Officer.

Note:

Persons already working in the University on the post of Section Officer or an equivalent post and who do not possess post-graduate degree but who are graduates could be considered provided that such persons possess atleast three years experience of administration in a position involving supervision, control and planning, and also possess 5 years practical experience in a newspaper of National/State level standard or of working in Central/State Public Relations Office as Journalist, sub-Editor, Reporter or Assistant Public Relation Officer."

(4) **Receptionist**:
(Rs. 620-20-760-25-1010-30-1100)

Qualifications: A graduate of a recognised University. Command over spoken Hindi and English. Familiarity with the working of a University or an institution of higher learning. Experience as a Receptionist will be preferred. Pleasing personality will be deemed to be an additional qualification.

Persons who had already applied in response to earlier advertisement No. 10/79 for the post of Registrar and No. 10/78 and 10/79 for the post of Controller of Examinaions need not apply again. They should intimate to the University that they are still desirous to be considered for the post applied for on the basis of their earlier applications sent in response to the aforesaid advertisements. They may also send the particulars of their additional qualifications and experience etc. acquired since then by them on plain paper.

The University reserves the right to alter the number of posts in any cadre. Benefit of Provident Fund and other allowances will be admissible as per rules of the University. Candidates desiring to apply for more than one post must send their applications separately for each post. Candidates will be called for interview at their own expense. Retired persons need not apply.

V.D. Qamra
REGISTRAR

UNIVERSITY OF BOMBAY

BOMBAY

Applications are invited in the prescribed form for the following posts in the University :

Posts	Centre
1. Two Readers 2. Two Lecturers 3. One Lecturer in Swahili	Centre of East African Studies (Area Studies Programme)
4. Two Readers 5. Two Lecturers 6. One Lecturer in Russian Language	Centre of Soviet Studies (Area Studies Programme)

The pay-scales of the posts are : **Reader**—Rs. 1200-50-1300-60-1900 and **Lecturer**—Rs. 700-40-1100-50-1600.

In addition to pay, Dearness Allowance, House Rent Allowance and Compensatory Local Allowance will be paid according to the University rules. All posts carry the benefits of Provident Fund and Gratuity according to the University rules. A higher starting pay may be given to persons appointed to the posts of Reader in special cases. The appointments to the posts will be on probation for two years but the probationary period may be reduced by the Executive Council in special cases. Other things being equal, preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requirements regarding qualifications, experience etc. laid down for the posts; provided, however, that if no candidate is available from scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified persons from among the other candidates.

The **minimum qualifications** prescribed for the posts are as under :—

Reader:

Good academic record with a Doctor's degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer:

(a) A Doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

Explanation:

(1) For determining consistently good academic record, a candidate should either have an average of 55% marks at the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% marks at each of the two examinations separately.

(2) For determining high second class, the mid-point between the minimum percentages of marks fixed by a University for award of second class and first class may be taken.

The **additional qualifications** prescribed for the posts at serial numbers 1 to 5 mentioned above are as under:

1. **Two Readers (African Studies)**—Preferably with specialization in Political Science/Sociology/History. Teaching/Research experience in African Studies.

2. **Two Lecturer (African Studies)**—Teaching/Research experience in African Studies.

3. **One Lecturer in Swahili (African Studies)**—Diploma in Swahili Language and Literature essential.

4. **Two Readers (Soviet Studies)**—Preferably with specialization in Political Science/Sociology/History. Teaching/Research experience in Soviet Studies.

5. **Two Lecturers (Soviet Studies)**—Preferably with specialization in Political Science/Sociology/History/Economics. Teaching/Research experience in Soviet Studies.

Eight copies of the application, in the prescribed form, should be sent in an envelope superscribed with "Application for the post of ——————" so as to reach the Registrar (Teaching Appointments Unit), University of Bombay, Bombay-400 032, **on or before Monday, 9th June, 1980**. Candidates from abroad, Andaman and Nicobar Islands and Lakshadweep may send their applications so as to reach the Registrar **on or before Monday, 23rd June, 1980**.

Applications received after the last date will not be considered. Prescribed forms of application can be had in person, free of charge, from the Teaching Appointments Unit Registrar's Office, (Room No. 110), University of Bombay, Fort, Bombay-400 032.

Requests for supply of a set of eight prescribed forms by post should be made sufficiently in advance with a self-addressed stamped (Rs. 1.80) envelope of the size of 27 x 12 cms.

Candidates should send with every application a crossed Indian Postal Order or a crossed Demand Draft on a scheduled bank for Rs. 10/- drawn in favour of the Registrar, University of Bombay, payable at Bombay, as application fee. Candidates who apply for more than one post should send separate applications along with the requisite fee by means of a crossed Indian Postal Order/Demand Draft. Money orders or cheques or cash will not be accepted by the University. The fee will not be refunded once an application has been received by the University.

Incomplete applications and applications without the requisite fee will not be considered. Applications on plain paper will not be considered.

Candidates are advised to satisfy themselves before applying that they possess the prescribed qualifications and it is for the candidates themselves to ensure that they possess the prescribed qualifications. No inquiry asking for advice as to eligibility will be entertained.

Candidates called for interview will have to present themselves at their own expenses.

Canvassing, direct or indirect, will be a disqualification.

Note:—Persons who had applied for the above mentioned posts in response to the advertisement dated **21st December, 1978** need not apply afresh. However, if they have any additional information to supply, the same should be supplied in eight copies.

G.M. Rajarshi
REGISTRAR

HARYANA AGRICULTURAL UNIVERSITY

Advertisement No. 3/80

Applications invited for following posts. Higher start outstanding qualifications, experience and achievements. Benefits of Contributory Provident Fund and leave etc. according to University Rules. Applications of the candidates already in service must reach through proper channel upto the fixed date. Applications on prescribed form (obtainable free by sending self-addressed unstamped envelope size 23x10 cms. to Assistant Registrar (R), HAU, Hissar) accompanied by prescribed fee of Rs 10 - in the form of Crossed Postal Order in the name of Assistant Registrar (R), HAU, Hissar payable at HAU Hissar Post Office should reach Registrar by **31-5-1980**. The applicants must possess prescribed qualifications and experience on the last date of receipt of applications. The Envelope containing application must be superscribed as ',APPLICATION FORM FOR THE POST OF..........."

1. **Professor of Agril. Business Management**—(One): (i) Second class Bachelor's degree. (ii) Second class Master's degree in Business Management or equivalent Post-graduate Training. (iii) Ph.D. in Business Management with special reference to agriculture or animal sciences. (iv) Ten years experience of teaching/research/actual work in Business Management in relation to Agril. development out of which atleast 5 years should be as Associate Professor or of equivalent rank.

2. **Senior Seed Technologist**—(One): Essential : (i) Second Class B. Sc. (Agri.)/B. Sc. (ii) Second class M.Sc. (Agri.)/M.Sc. in Plant Breeding/Genetics/Seed Technology. (iii) Ph.D. in Plant Breeding/Genetics/Seed Technology. (iv) Ten years' experience of research/teaching extension in Plant Breeding/Genetics/Seed Technology as evidenced by published work and out of which 5 years should be as Associate Professor or in equivalent rank.

Desirable:

(i) Advanced training in Seed Technology Research (ii) Capability to organise Breeder's Seed Production and the Seed Technology Research.

3. **Associate Professor of Statistics**: (One):

(i) Second class Bachelor's degree wih Maths./Stat./B.Sc. (Ag.). (ii) Second class M. A./M.Sc. in Statistics or Mathematics. (iii) Ph.D. with specialization in any branch of Statistics. (iv) Atleast five years teaching/research experience in Statistics, with special reference to designing of experiments in Agriculture or Animal Husbandry, with evidence of having conducted independent research and published its results in journals of repute.

4. **Associate Professor (Livestock Production & Management)**—(One):

Essential:

(i) Second class B.V.Sc. & A.H./B.Sc. (An. Scs.)/B.Sc. (Agri.)/B.Sc. (Dairying). (ii) Second class M.Sc. in any branch of Animal Sciences. (iii) Ph.D. in any branch of Animal Sciences. (iv) Five years experience in teaching/research/extension preferably in Livestock Production & Management.

Desirable:

Experience in management of large Dairy Herd Establishments.

5. **Associate Professor (Vegetable Crops)—(One):**

Essential:

(i) Second class B.Sc. (Ag.). (ii) Second class M.Sc. Olericulture/Horticulture with specialization in Vegetable Corps. (iii) Ph.D. in one of the subjects as at (ii) above. (iv) Five years experience of teaching/research/extension in Vegetable Crops and food preservation.

Desirable:

(i) Adequate experience in establishing and maintaining vegetable farms and seed production of vegetable crops. (ii) Ability to impart training in Hindi

6. **Senior Medical Officer—(One).**

Essential:

(i) M.B.B.S. or equivalent (ii) House Surgeon experience of one year. (iii) Post-graduation in Medicine or Surgery. (iv) Atleast 7 years experience.

Desirable: Experience in administrative capacity.

7. **Assistant Professor (Fruit & Vegetable Preservation)—(One):**

Essential:

(i) Second class B.Sc. (Ag.)/B.Sc. (Food Technology)/B.Sc. (Home Science). (ii) Second class M.Sc. in Hort./Veg./Food Tech./Home Sc. (Foods & Nutrition with specialisation in Fruit and Vegetable Preservation. (iii) Ph.D. in any of the subjects as at (ii) above. OR 3 years experience of teaching/research/extension in fruit and vegetable preservation.

Desirable:

Capacity to organise preservation trainings in rural areas.

8. **Assistant Research Officer (Vety. Physiology)—(One):**

Essential:

(i) Second class B.V.Sc./B.Sc. (Agri.)/B.Sc. Animal Science/B.Sc. (ii) Second class M.Sc./M.V.Sc, in Physiology/Animal Biochemistry. (iii) Ph.D. in Physiology/Animal Biochemistry OR Second class M.Sc./M.V. Sc. in Physiology/Animal Biochemistry with three years experience in teaching/research/extension in Physiology preferably on the feed intake in animals.

Desirable:

Acquaintance with the techniques assey of metabolites, VFA and Steroids.

9. **Junior Scientist (Animal Nutrition Department)—(One):**

Essential:

(i) Second class B.Sc. (Animal Sciences)/B.V.Sc. & A.H./B.Sc. (Dairying)/B.Sc. (Agril.). (ii) Second class M.Sc. in Animal Nutrition/Bio-chemistry. (iii) Three years experience in Animal Nutrition research/teaching OR Ph.D. in Animal Nutrition/Biochemistry.

10. **Assistant Professor of Genetics—(One):**

Essential:

(i) Second class B.Sc. (Agri.) or B.V.Sc. or B.Sc. (ii) Second class M.Sc. in Genetics. (iii) Three years experience of teaching and/or research in Genetics OR Ph.D. in Genetics.

11. **Assistant Professor (A.I.)—(One):** (i) Second class B.V.Sc. & A.H./B.Sc. (An. Sc.)/B.Sc. (Ag.) with A.H. specialization/B.Sc. (Dairy Husbandry). (ii) second class Master's degree in Animal Physiology or equivalent with specialization in A.I. or Reproduction and three years experience in teaching/research/extension in Animal Physiology OR Ph.D. in Animal Physiology with specialization in A.I. or Reproduction.

12. **Assistant Statistician—(One):**

Essential:

(i) Second class B.Sc. (Agr.) OR B.A./B.Sc. (Mathematics). (ii) Second class Master's degree in Statistics or Mathematics with Statistics as a special subject followed by training in Agricultural Statistics from a recognised Institution. (iii) Atleast three years practical experience of handling statistical investigations and/or designing of field experiments, tabulation and presentation of statistical data or Ph.D. in Statistics.

(**Note**: Persons who do not possess the above qualifications may be considered in the lower scale of Rs. 600-30-750-40-950).

13. **Assistant Soil Chemist—(One):** (i) Second class B.Sc. (Ag.)/B.Sc. (ii) Second class M.Sc. (Ag.) in Soil Science with three years experience in Teaching/Research/Extension in Soil Chemistry/Soil Fertility OR Ph.D. in Soil Fertility/Soil Chemistry.

14. **Assistant Breeder (Oilseeds)—(One):**

(i) Second class B.Sc. (Ag.)/ B.Sc. (ii) Second class M.Sc./M.Sc. (Ag.) in Plant Breeding/Genetics/Agri. Botany with three years experience of teaching/research/extension in Plant Breeding preferably in Oilseeds like groundnut and Sesamum OR Ph.D. in Plant Breeding/Genetics/Agri. Botany preferably on Oilseeds.

15. **Coaches** (One each in Athletics, Hockey and Wrestling):

Essential:

(i) Bachelor's degree with atleast 1 year course leading to diploma in Physical Education. (ii) N.S./N.I.S. diploma in concerned sport. (iii) M.P.E. regular course/M.P.E. (Summer course) M.E. Ed. (1-Year course)/ M.A. in Physical Education (2-year course)/ M.P.Ed. (2-year course). (iv) Atleast 3 years coaching/teaching experience in a College/University. (v) Participation in Inter-University/State/National/International level in concerned sport.

Desirable:

(i) Qualified official in the concerned sport. (ii) Publication of Books/Articles in Journals. (iii) Coaching Inter-Varsity/ State/ National/ International teams.

NOTE:

1. For posts at Sr. Nos. 1 to 5 and 7 to 15, one or more qualifications relaxable in case of candidates found otherwise outstanding.
2. Special weightage will be given to extension experience possessed by the candidates, for posts in disciplines amendable to extension.
3. For posts at Sr. Nos. 7 to 14, the persons who do not possess Ph.D. at the time of their selection, if selected, will have to obtain Ph.D. degree within a period of five years failing which their future increments may be stopped.
4. For post at Sr. No. 8, requirement of experience is relaxable if persons with requisite experience are not available.
5. No. of posts mentioned against each post is likely to vary.
6. 20% and 5% vacancies of Assistant Professors and equivalent are reserved for Scheduled Castes and Backward Classes candidates respectively, if suitable candidates from these categories are available.

PAY SCALES:

Post of 1 & 2 1500-60-1800-100-2000-125/2-2500.

3 to 5—1200-50-1300-60-1900.

6—1100-50-1600+N.P.A. and other allowances as admissible and rent-free accommodation.

7 to 14—700-40-1100-50-1600.

15—700-40-1100-50-1300.

Total emoluments at the initial of the pay scale (exclusive of House rent)

For Post of 1 & 2—Rs. 1930/-
3 to 5—Rs. 1585/-
6—Rs. 1485/-+N.P.A.
7 to 14—Rs. 1019/-
15—Rs. 1019/-

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Addendum to Advertisement No. 4/80.

The last date for receipt of applications, in the prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm size, for the posts of Professors, Assistant Professors and Lecturers in the Department of Mechanical Engineering of the Institute, issued vide Advertisement No. 4/80, has been extended up to May 31, 1980.

UNIVERSITY OF RAJASTHAN

JAIPUR

CORRIGENDUM

The post of Professor of Chemistry advertised under Advertisement No. 9/80 is the post of Professor of Physical Chemistry.

V.D. Qamra
REGISTRAR

UNIVERSITY OF HYDERABAD

HYDERABAD

Advertisement No. Estt. 1/80

Applications on the prescribed form are invited for the posts of Professors, Readers and Lecturers as detailed below for various Schools/Departments in the University.

SCALES OF PAY

1. Professor: Rs. 1500-60-1800-100-2000-125/2-2500.
2. Reader: Rs. 1200-50-1300-60-1900.
3. Lecturer: Rs. 700-40-1000-50-1600.

Approximate emoluments at the minimum of the scales for Professor: Rs. 2,377/-; Reader: Rs, 2,030/- and Lecturer: Rs. 1,328/-

Qualifications and Experience

Professor: A first or high second class Master's degree in the subject concerned and consistently good academic career; a Doctorate Degree and considerable published work of high standard; Ten years' Post-graduate teaching experience and experience of guiding research work.

Reader: A first or high second class Masters' Degree in the subject concerned; A Doctorate Degree and published work of high standard; 5 year's experience of teaching in Honours/Post-graduate classes or post-doctoral research.

Lecturer: (i) A Doctorate Degree or research work of equally high standard and (ii) consistently good academic record with first or high second class (B in the 7-point scale) Master's degree in the relevant subject or an equivalent degree of a foreign University.

The Selection Committee may recommend relaxation of any of the qualifications at (i) and (ii) above subject to certain conditions provided a candidate has done research work for at least two years or has practical experience in a research laboratory/organisation or has published work of high standard.

Details of Posts, Broad Areas of Research and Specialisation

1. SCHOOL OF PHYSICS

   Professors (2) and Readers (4) in **Theoretical Physics**: Quantum Optics, Non-Linear Optics, Statistical Physics, Plasma Physics, Solid State Physics.

   Experimental Physics: Low temperature Solid State Physics, Material Science—Preparation and characterization of materials, Solid State electronics, Laser Physics, Surface Physics.

   Lecturer (1) in Experimental Physics.

2. SCHOOL OF CHEMISTRY

   Lecturer (1) in Physical/Inorganic/Organic/Theoretical Chemistry.

3. SCHOOL OF HUMANITIES

   Department of Philosophy
   Professor (1) and Lecturer (1) in Classical Philosophy/Philosophy of Natural and Exact Sciences/Philosophy of Social Sciences/Analytical Philosophy.

4. SCHOOL OF SOCIAL SCIENCES

   (A) **Department of History**
   Lecturer (1) in Medieval Indian History.

   (B) **Department of Sociology & Anthropology**
   Professor (1) in Sociology/Social and Cultural Anthropology.

NOTE: The number of posts indicated above is only tentative and is likely to vary depending upon the positions available at the time of selection.

GENERAL

For the posts of Lecturers, preference will be given to Scheduled Caste and Scheduled Tribe candidates who are considered fit.

In addition to pay, the posts carry allowances as per University rules which at present are equivalent to those admissible to Central Government employees stationed in Hyderabad. Retirement benefits as per University rules.

Prescribed application forms are available from the Assistant Registrar (Administration) on request accompanied by a self-addressed stamped (60 paise) envelope. Applications with the requisite fee of Rs. 7-50 (non-refundable) in the form of crossed Postal Order drawn in favour of the Finance Officer and other documents/certificates/publications should reach the Registrar, University of Hyderabad, Central University P.O., Hyderabad 500 134 on or before **7th June, 1980**.

Candidates called for interview from out-stations will be paid contribution equivalent to return single second class railway fare towards their journey expenses. Candidates already in service should submit their applications through proper channel. Applications received after the last date or without the complete information or without the requisite fee may not be entertained.

It will be open to the University to consider the names of suitable candidates who may not have applied. Relaxation of any of the qualifications, experience, etc. may be made in exceptional cases in respect of all posts on the recommendations of the Selection Committee. Canvassing in any form for or on behalf of any candidate will disqualify such candidate.

P.V. George
REGISTRAR

It pays to
Advertise
in
University
News

Campus News Contd.

Bihar Ordinances

The Bihar Government has promulgated ordinances setting out codes of conduct for the teaching and non-teaching staff of universities and appointing senior IAS officers as Vice-Chancellors of five of the seven universities in the State. The measure has been taken to tone up administration in these universities and restore academic order on the campus. The ordinances have banned participation of the teachers and the non-teaching staff in agitations. The teachers have also been barred from writing guide-books and indulging in private tuition.

UGC clears Trichy and Coimbatore University

Prof. Satish Chandra, Chairman, University Grants Commission said in Madras that the Commission has been keen on developing adult education and extension work through universities and colleges. Referring to the proposed universities at Coimbatore and Tiruchirapalli, Prof. Chandra said that the UGC had cleared them and they would become eligible for central assistance when certain conditions imposed by the Commission had been fulfilled.

Academics to study UP politics

In Uttar Pradesh, academics from fifteen universities have formed a State Political Science Association. Mr A.F. Usmani, Reader in the Aligarh Muslim University said that the Association will make an indepth studies of the State's socio-political economic problems at the grassroot level. The office bearers of the Association are : Mr S.A.H. Hazzi, President (from AMU); Mr I.N. Tewari, Secretary; Mrs Vimla Puri, Vice-President (from Meerut University); and Dr J.N. Lal, Vice-President (from Avadh University).

SRI VENKATESWARA UNIVERSITY

Advertisement No. EII-2/1980(1), dated 3-5-1980.

Applications are invited in the prescribed form for the following posts in the University Service on or before 2-6-1980.

S. No.	Post & Department	No. of Posts	Specialisation
I.	**S.V.U. COLLEGE OF ARTS & SCIENCES: TIRUPATI**		
1.	Readers in Botany	Two (1 Ty)	Plant Virology (Permanent Post)
2.	Lecturer in Biochemistry	One (Ty)	
3.	Readers in Chemistry	Two (1 Ty)	
4.	Lecturer in Chemistry	One	
5.	Reader in Geography	One	Agricultural Geography
6.	Reader in Geology	One	
7.	Readers in Home Science	Two	1. Nutrition and Foods 2. Home Science Extension Education
8.	Reader in Physics	One	
9.	Reader in Zoology	One (Ty)	
10.	Lecturer in Zoology	One (Ty)	
11.	Professor in Commerce	One	Personnel Management and Industrial relations/Banking/Financial Management/Cost Accountancy/Taxation
12.	Reader in Commerce	One	
13.	Lecturer in French (Area Studies Programme—Dept. of History)	One	Language & Literature
14.	Lecturer in Hindi	One (Ty)	
15.	Reader in Law	One	
16.	Reader in Philosophy	One	
17.	Professor in Population Studies	One	
18.	Lecturer in Sanskrit	One	Pali/Prakrit
19.	Professor in Sociology	One	
20.	Professor in Tamil	One (Ty)	
21.	Lecturer in Tamil	One	
II.	**S.V.U. COLLEGE OF ENGINEERING: TIRUPATI**		
22.	Professor in Civil Engineering	One	
23.	Lecturer in Civil Engineering	(One (Ty)	
24.	Lecturers in Mechanical Engineering	Three (2 Ty)	
25.	Reader in Electrical Engineering	One (Ty)	Electrical Machines/Power Systems/Control Systems.
26.	Lecturer in Electrical Engineering	One (Ty)	Electrical Machines/ Power Electronics/Control Systems.
27.	Lecturer in Electronics & Communications Engg.	One	Digital Communications/Microwave communications/Communication Engg./Communication systems/Space Communications.
28.	Lecturer in Humanities	One	Industrial Psychology.
III.	**S.V.U. POST GRADUATE EXTENSION CENTRE, CUDDAPAH**		
29.	Lecturer in Chemistry	One	Inorganic Chemistry/Physical Chemistry/Organic Chemistry/Analytical Chemistry.
30.	Lecturer in Geology (Applied)	One	Mining Geology/Mineral exploration/Hydrogeology/Geochemistry/ Engineering Geology.
31.	Reader in Public Administration	One	Personnel Management
32.	Reader in Commerce	One	Advanced Accounts/Cost Accountancy/Financial Management/Management Accounting.
IV.	**S.V.U. POST GRADUATE EXTENSION CENTRE: KAVALI.**		
33.	Lecturer in Physics	One	Acoustics /Electronics/Bio-Physics/Mathematical Physics.
34.	Lecturer in Zoology	One	Neurobiology/Marine Zoology.
V.	**S.V.U. POST GRADUATE EXTENSION CENTRE : KURNOOL**		
35.	Lecturer in Chemistry	One	Organic/Inorganic Chemistry
36.	Lecturer in Physics	One	Electronics/Solid State Physics/Mathematical Physics/Spectroscopy.
37.	Reader in Statistics	One	Operations Research and Statistical Quality Control.
38.	Professor in Telugu (Sanjeevaiah Centre for Telugu Studies).	One	

Scale of Pay :

1. Professor : Rs. 1500-60-1800-100-2000-125/2-2500. 2. Reader : Rs. 1200-50-1300-60-1900.
3. Lecturer : Rs. 700-40-1100-50-1600.

All the above posts carry D.A. etc., at the University rates. There will be reservation for S.C./S.T./B.C. candidates for "Lecturers" posts according to U.G.C./State Government guidelines.

The prescribed application form and other particulars can be had from the Registrar, Sri Venkateswara University, Tirupati-517502, Andhra Pradesh, on payment of Rs. 5/- either by Andhra Bank Chalan or State Bank of India Chalan Crossed *Indian Postal Orders of the said value drawn in favour of the Registrar, Sri Venkateswara University, Tirupati or 517502, Andhra Pradesh (*Payable at the S.V.U. Campus Post Office, Tirupati).

The University reserves to itself the right to increase or decrease the number of posts, to fill or not to fill any or all of the above posts, and to relax the qualifications when candidates with prescribed qualifications are not available or not found suitable and to consider and appoint persons who may not have applied.

Candidates called for interview have to attend at their own expenses.

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Advertisement No. 16/80

Applications are invited for the following posts in the Institute in the pay scalesnoted against each :

Professor : Rs. 1500-60-1800-100-2000-125/2-2500.

Assistant Professor : Rs. 1200-50-1300-60-1900.

Lecturer : Rs. 700-40-1100-50-1600.

The Departments of Chemical Engineering and Electrical Engineering are seeking individuals to fill up the teaching positions with ability and aptitute for teaching in undergraduate/postgraduate programmes, research and development in any of the areas of specialisations listed under each. **However, applications from outstanding candidates in other areas in the Departments may also be considered.** The number of positions available in each of the departments are also indicated below:

Department of Chemical Engineering:

(Professor, Assistant Professor and Lecturer)

1. Process dynamics/control, simulation, optimization and process engineering.
2. Chemical reaction engineering, chemical thermodynamics and transport phenomena.
3. Energetics, environmental pollution and control, petroleum processing, petro-chemicals, coal gasification and polymers, and biomedical engineering.

Number of Positions—10 (Ten)

The Department has an energetic and young faculty, and active postgraduate programme. The department is actively involved in sponsored research and development projects funded by Governmental agencies and industry., There are well equipped laboratories in the department.

Department of Electrical Engineering:

(Professor, Assistant Professor and Lecturer)

Digital and Linear Circuit design, Device modelling, Bioelectronics, Computer-aided design, Instrumentation and transducers, Computer architecture, Microprocessor applications; Real time computer control; control theory, Numerical/Process control High voltage engineering, Power electronics and industrial drives.

Number of Positions—15 (Fifteen)

The Department has presently 34 faculty members and an active postgraduate programme with about 40 Ph.D. students and 100 M. Tech. students in addition to its heavily subscribed undergraduate programme. The Department is actively involved in sponsored research and development projects funded by Governmental agencies and by industry.

Qualifications and experience for various positions:

Professor:

Doctorate degree with excellent academic record and atleast eight years of professional experience of good quality outside the work for degree.

OR

M. Tech. with excellent academic record and atleast fifteen years of industrial experience with brilliant record outside the work for the degree.

The candidates must haved emonstrated ability in teaching and independence in research evidenced by significant contributions by way of publications of good quality in journals of repute or developmental projects work of merit in any one of the aforesaid areas of specialisation.

Assistant Professor:

Doctorate degree with excellent academic record and atleast three years of professional experience outside the work for the degree. OR

M. Tech. with excellent academic record and atleast seven years of industrial experience outside the work for the degree. The candidates must have demonstrated ability in teaching and independent research work as evidenced by adequate number of research publications of good quality in journals of repute or developmental work of merit in any one of the aforesaid areas of specialisations.

Lecturer:

Doctorate degree with excellent record and atleast three years of teaching research/industrial experience with good record outside the work done for the degree.

The candidate must have ability for good teaching an independent research evidenced by adequate publications or developmental work in any one of the aforesaid areas of specialisations. **For all these positions basic degree in respective branch of engineering is required.**

The Institute has well equipped laboratories and also Biosystems Laboratory, Laser Laboratory, besides central facilities. There is a well established Computer Centre having DEC 10, IBM 1800, PDP-I Systems with interactive graphic terminals and TDC-316, and a group of experienced programmers. The Institute has a well stocked library with more than 2 17,000 volumes and 1800 periodicals. The Central facilities included 2 MeV Van de Graaff accelerator, 4096 multichannel analyser and other radiation detection equipment, liquid nitrogen and spectrometers, glass blowing shop, crystal growth facility, central instrumentation laboratory, precision machine shop, electron microscope besides a large workshop for fabrication of specialised research apparatus.

There is an Advanced Centre for Electronic Systems in the Institute attached to the Department of Electrical Engineering. The Centre carries out unclassified research and development work in the areas such as Communication, Radar, Signal and Image processing and instrumentation systems sponsored by Governmental agencies and industry. Besides, an Advanced Centre for Materials Science has been established recently at the Institute by the Government of India to undertake research in the frontiers of development on materials of national importance.

The Campus facilities include a Primary and Higher Secondary School, a Health Centre and a Shopping Centre.

The posts are permanent and carry retirement benefits in the shape of CPF Scheme or GPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme, as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

In the category of Lecturer one post in each Department will be reserved for SC/ST candidate. In the event of non-availability of suitable SC/ST candidate, the reserved posts would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm. x 10 cm size. Application should be accompanied by a postal order for Rs. 7.50 (Re. 1.87 for SC/ST candidates).

Applicants who are employed in a Government/Semi-Government organisation or Institutions should send their applications through proper channel, else they will be required to produce a 'No Objection' certificate from their employers at the time of interview.

Applicants from abroad may apply on plain paper enclosing a complete biodata and names of three referees from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016, U.P. (India) on or before **June 16, 1980**.

UTKAL UNIVERSITY

CORRIGENDUM

Corrigendum to Advertisement No. Estt. 1/926-C /8054/80 dated 21-4-80.

This is for information of all concerned that the last paragraph of the relevant advertisement in question published earlier relating to the leave salary and pension Contribution in respect of candidates in Govt. Service is modified and shall be read as under :—

> "In case of candidates appointed from Govt. Service, the University will bear the Leave Salary and Pension contributions for a period of two years only."

University Office,
Vani Vihar, Bhubaneswar-4.

REGISTRAR

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University
News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JUNE 1, 1980

Food Science & Technology
Information Service
24 JUN 1980
C.F.T.R.I., MYSORE

Prof. M.V. Mathur, Director, National Institute of Educational Planning and Administration, inaugurating the Fourth Training Programme in Financial Management held recently in New Delhi.

UNIVERSITY OF CALICUT

Calicut University P.O.

No. Ad. A3/668/80.

Notification

Applications are invited from qualified candidates for appointment to the undermentioned posts in the University.

Category	Scale of pay	No. of Vacancies
1. Professor of Applied Mathematics	1450-2050	1
2. Professor of Library Science	,,	1
3. Reader in Journalism	1125-1725	1 (in the absence of a suitable candidate for the post of Reader, a Lecturer will be appointed)
4. Reader in Botany	,,	1 (temporary)
5. Reader in Commerce (Transport Management)	,,	1
6. (i) Lecturer in Physics (with specialisation in Experimental area related to Nuclear Physics or Solid State Physics)	800-1600	1
(ii) Lecturer in Physics	,,	1 (temporary)
7. Lecturer in Drama	,,	2
8. Lecturer in Economics	,,	1
9. Lecturer in Mathematics	,,	1 (temporary)
10. Junior Engineer (Instrumentation)	800-1500	1

N.B. (i) Categories 1, 3 and one of 7 are reserved for Ezhava/Thiyya/Billava candidates.
(ii) Categories 4, 8 and 9 are reserved for SC/ST candidates.
(iii) Category one of 6 is reserved for Muslim Candidates.
(iv) The remaining posts are open.

However, for categories 1, 3, 4, 6, 7, 8 and 9 if no suitable candidates are available from the communities for which the posts are reserved, candidates from other communities/by open merit will be considered for appointment as per rules.

Qualifications and age for Junior Engineer (Instrumentation)

At least a II class degree in Engineering/M.Sc. with 2 years experience in the operation of sophisticated Instruments/repair and maintenance of Modern instruments.

Desirable

A flair for R & D activity in instrumentation.

OR

Diploma in Engineering/B·Sc. with 8 years experience in the operation of sophisticated instruments, repair and maintenance of modern instruments.

Age

Below 35 years with usual relaxation to Scneduled caste and Scheduled tribes and other backward castes.

Appication forms, details of qualifications age ec. in respect of categories 1 to 9 and prescribed application forms in respect of category 10 can be had from he Deputy Registrar (Admn.) of the University on payment of Rs. 5/- by way of crossed Indian Postal Order drawn in favour of the Finance Officer, University of Calicut and payable at Calicut University Post Office.

Last date for receipt of completed application is **15-6-1980**.

REGISTRAR

UNIVERSITY OF NORTH BENGAL

Advt /10/R-80 dt. 20.5.80

Applications in prescribed forms are invited for the following posts, viz :

(A) Professor of History (post one) in the scale of pay of Rs 1500-60-1800-100-2000-125/2-2500/- with allowances and other benefits as per University Rules.

(B) Reader in Commerce (post one) in the scale of pay of Rs 1200-50-1300-60-1900/- with allowances and other benefits as per University Rules.

(C) Lecturer in Commerce (post one) and lecturer in Economics (post one, in the scale of pay of Rs 700-40-1000-50-1600/- with allowances and other benefits as per University Rules.

Minimum qualifications for posts A, B and C :- (a) A Doctor's degree or published research work of an equally high standard, and (b) consistently good academic record with 1st or high second class (B in the seven point scale) Master's degree in the relevant subjects or an equivalent degree of a foreign University.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Additional requirements for post A : An eminent scholar with published work of high standard actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level. Or, an outstanding Scholar with established reputation who has made significant contribution to knowledge.

Additional requirements for post B : (a) evidence of being actively engaged in (i) research or (ii) innovation in teaching methods, or (iii) production of teaching materials; (b) above 5 years experience of teaching and/or research provided that at least three of these years were as lecturer or in an equivalent position. The qualifications may be relaxed as per directives of the University Grants Commission.

Posts A, B & C are reserved for candidates belonging to Scheduled Castes/Scheduled Tribes provided they fulfil the essential Minimum qualifications laid down. In case qualified candidates are not available, these will be treated as unreserved.

Choice of selection committee may not necessarily be confined to those who apply formally. No applications except in prescribed application forms may be considered.

Prescribed application forms may be obtained from the office of the Registrar personally on payment of Re. 1/- in cash at the University cash counter or by sending a self addressed stamped Re 1.20 (one rupee and twenty paise) envelope of 25 cm × 13 cm with crossed Indian Postal Order of Re. 1/- in favour of the University of North Bengal. Filled in application forms 6 (six) copies must reach the office of the Registrar, P.O. North Bengal Univesity Dist. Darjeeling Pin : 734430 within 21 days from the date of publication of this notification.

REGISTRAR

NIVERSITY
NEWS

l. XVIII JUNE 1
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Higher Education 80 Paise

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Training Programme in Financial Management

24 JUN 1980
C.F.T.R.I., MYSORE

The National Institute of Educational Planning and Administration organised the Fourth Training Programme in Financial Management for Finance Officers of Universities in India from May 5-17, 1980 at New Delhi. It was attended by finance officers from 17 universities, viz, Punjabi University, University of Bombay, A.P.S. University, Roorkee University, Haryana Agricultural University, Lucknow University, Kumaon University, Garhwal University, Sambalpur University, Nagarjuna University, Jabalpur University, Saurashtra University, Gorakhpur University, University of Madras, Meerut University, Bhopal University and University of Jodhpur. Some Finance Officers were called 'Finance Officers', other were Controllers and a third set of people was called Deputy Registrars (Finance). Most of them were on deputation from other departments like State Civil Service or Accounts and Audit Departments. The training programme was organised with the following main objectives:

(a) to enable the participants to appreciate the role of education in general and higher education in particular in the socio-economic development of the country;

(b) to develop in them better comprehension of the existing system of financial administration in the Indian Universities and to facilitate its systematic review particularly in the context of changing dimensions of higher education in India;

(c) to assist in the identification and understanding of the newer role and responsibilities of the finance function of Indian Universities, and to assess its impact on academic programmes; and

(d) to promote an awareness of the techniques of modern management in general and of modern financial management in particular, especially from the point of view of their application in educational administration.

The contents of the training programme was drawn up by a Steering Committee which consisted of Prof M.V. Mathur, Director, NIEPA as its Chairman, Shri. J. Veeraraghavan, Executive Director, NIEPA, Shri R.K. Chhabra, Secretary, UGC, Prof B.S. Sharma, Faculty of Management Studies, University of Delhi, Shri Dhirendra Krishna, Finance Officer, University of Delhi and Dr C.B. Padmanabhan, Fellow, NIEPA.

The following topics were covered in the training programme:

1. UGC and its Working
2. System of Financial Administration in Indian Universities
3. O & M Methods in University Administration
4. Revenue, Planning, Monitoring, Preparation and Maintenance of Accounts in Universities
5. Grants-in-aid to Affiliated Colleges—Patterns and Procedures
6. Delegation and Control in Indian Universities
7. Planning, Programming and Budgeting System
8. Financing of Higher Education in India
9. Higher Education in India
10. Elements of Financial Information Systems
11. Role of Finance Officer—Panel Discussion
12. Role of Finance Officers—Lecture Discussion
13. UGC and Financing of Higher Education
14. Internal Audit
15. Effective Utilisation of Financial Resources
16. Staffing and Promotional Policy
17. Role and Function of Finance Committee

(*Continued on page 310*)

Evaluation of Performance Vs Our Universities

R. P. Puri*

The progressive growth of an institution is hampered if it does not implement a system of meaningful evaluation of the work done by its employees. In consequence, they may become apathetic towards their duties, and, may also, in due course of time turn to be parasites. Both will lose equally at the end.

In those universities where promotion avenues for the non-teaching employees have reached a somewhat saturation point for the time being, the assessment of their work seems to have lost its significance, maybe temporarily, particularly when appreciation of the good work done is sought to be measured in the scale of promotions or desired to be rewarded in the shape of immediate substantial financial benefits. There is, thus, no gainsaying the fact that in such a situation employees most likely will work below their potential and ability if the criteria for measuring their work performance and efficiency are vague. They will become disinterested if the "active" and the "inactive" workers are treated alike and their achievements are evaluated without any distinction being made in the quality of their respective performance when time comes for reward distribution. Their indifference is justified when their efforts are likely to remain unappraised and unrewarded suitably.

It is, therefore, both desirable and essential, that what is expected from the employee is made known to him in an unambiguous manner before he enters upon his office. The fact remains that most of the employees do not know the gradings and the criteria on which their performance is appraised. It is the confidential report which contains the items in respect of which an employee's work is adjudged. He must, therefore, know what traits of his would be adjudged and graded. And, if the format of the Confidential Report is different for various positions, the relevant form should be brought to his notice as and when a change occurs in his official status. The employee will, then, have no basis for complaint when called upon to explain at the appropriate time why his output lagged behind the specified standards. He should know how his performance would be weighed and what would be the resultant benefits if he puts in more labour in executing his job with reasonable measure of accuracy and speed. Unclear allocation of functions and responsibilities often becomes a subject of controversy—authorities insist that a certain job is the responsibility of the employee, while he may refuse to do it.

Performance standards should preferably be set out in a verifiable manner, ensuring that quality does not suffer at the cost of quantity. Jobs should be done diligently and meticulously, otherwise thei purposes may be thwarted.

Objectivity unquestionably plays a crucial role in assessing performance correctly. Conversely, if evaluation is made with personal biases and prejudices, the worker and the university will suffer alike. Factors that may impede objective evaluation, therefore, ought to be shunned and disallowed to exercise any influence. Here the Reporting Officer has a positive role to play. He cannot ignore this stark truth for long. If he becomes a victim of these undesirable attitudes, his action may adversely recoil on him and even endanger his own career. To cite an instant. In some cases, the criteria for allowing high grades may be other than work performance. As for example, there may be individuals who enjoy being treated slavishly and who indulge in flattery. Unfortunately they behave in this fashion because they want to be in the good books of their superiors. The entire blame cannot lie on such individuals. The evaluators are to be blamed equally.

Some of the evaluators are in the habit of allowing high grades, while others mark low. Since there is not one evaluator but many, evaluation made in this fashion may appear to be biased, for high markings allowed may not always be done accurately and be also not in consonance with performance standards. Such errors of leniency can, of course, be ignored, and sometimes tolerated when performance of an individual is not to be awarded any reward. But in the presence of some system of rewarding people, these errors can create serious administrative problems, including frustration among employees when their jobs, identical and equal in quantum, are to be evaluated by two different persons, one giving high marking, the other low.

Sometimes, grading from "Very Good" to "Excellent" is awarded, knowing full well that the employee is not doing even twenty per cent of the work which another employee of equal status is doing, or should do, in another department/branch. Not only this. And, if after evaluating the employee in this manner, the evaluator seeks his transfer to some other Branch, the latter does not need to be reminded that no head of department would like to relieve an employee who has secured such a high grade. It is obvious, therefore, that it were the extraneous factors, and not exclusively performance standards, which weighed the mind of the Reporting Officer, or, for that matter, the Reviewing Officer, in grading the employee so high. Who is going to answer the fundamental question, namely : Is the action of the evaluator, in the interest of the university or that of the employee ? *Prima facie*, it is an irresponsible, to use a mild expression. The unirsity will suffer so long as such an employee re- ains with it because he has not been fully and nkly told what his deficiencies are, so that all pos- ole remediable steps could be initiated to bring out improvements in his working behaviour. The nployee loses because wherever he goes, he carries th him false appreciation of his work.

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* These are personal views of the author who is Deputy Registrar at JNU, New Delhi.

Employees with identical designations working in culty offices of a university in many cases earn gh grades with less work, while those working in s main administrative wing with more both omplex and tension-ridden, are awarded low grad- gs. This imbalanced assessment impells the staff, ot surprisingly enough, to seek transfer from the dministrative wing of the university to faculty ffices.

There is also a tendency on the part of some valuators to repeat the same rating (which could be igh or low) for different traits of the individual. s for example, a person works in a department hich does not have a full day's job. He may arry out his duties a bit accurately after taking more than the required time and may thus get high atings (may be 'Excellent') for, say "Expeditious Disposal of Work". This individual may also ave to apply only one or two rules framed by the university in the performance of his duties because he work is less, both in quantum and complexity. Thus for "Knowledge of Rules", he may again get "Excellent". In another department/branch, an employee of almost of the same calibre may have to deal with numerous difficult jobs needing application of, say, four or five types of rules. Naturally, he may not get the same grading as the one just mentioned.

Another dangerous trend that is being witnessed among evaluators is the gradual inflation in appraisal of the employees. This is done first for bringing employees on the scale of equality, the value of which in some newly established universities has assumed some urgency as well as importance; and secondly for reducing negative repercussions which may come to surface by giving low marks. The method of grading employees in this manner would thus tantamount to hiding their weakness and deficiencies.

Ironically, still another disturbing trend has set in. It is the so-called spirit and desire to save one's skin. The Reporting Officer does not want to earn the displeasure of his junior by evaluating him correctly even when the performance of the latter is "Below Average" in respect of some or all traits cited in the confidential report. Thus, in order to avoid "negative repercussions" only such gradings are awarded which are not required to be communicated to the employee because these are not adverse in content. If the Reviewing Officer adopts the same *unethical administrative attitude*, he will also fully endorse the gradings awarded by the Reporting Officer. But if on the other hand, the Reviewing Officer allows low gradings, or if he disagrees with the Reporting Officer's assessment, in trying to be true to his conscience, his action may cause flutter among the adversely affected employees. And if this action of the Reviewing Officer is not supported by the authorities in case a crisis develops, he is doomed for eve. His fate will also serve as an eye-opener for other Reviewing Officers who may not like to fall in disrepute in attempting to be objective. The results are obvious. Efficiency in the institution and responsiveness to duties on the part of employees will pale into insignificance.

It is necessary to make the employee realize from time to time what his deficiencies are, where he is erring, and whether his output is "Good", "Satisfactory", or "Below Average". Such an appraisal should be a regular ongoing process. Its frequency could, however, he reduced if the employee shows uniformly good performance.

It is obligatory on the part of supervisors and other superiors to set goals to be achieved by their respective departments and then to watch progress in their attainment within a reasonable time, affording allowance for handicaps and other constraints. One of the challenging tasks which an executive faces in personnel management, is to make a correct estimation of the employee's performance and then to satisfy him and make him accept, not under duress but with the facts presented to him, the appraisal made of his work at the end of a specified period. The impression that the subordinate will thus get about his assessment will have a very strong and everlasting impact on his self-esteem. In fact, it will not stop there. His future performance will carry the imprint of the declarations made on his performances from time to time. When treated in this manner, there will arise an inner desire in him to improve his working habits.

In most of our universities, if the work is uniformally "average", an employee receives no intimation. It is only the so-called adverse entries in the confidential report which are communicated to him. An "Average" grading is not considered to be an adverse entry in the CR. It will be agreed that if any reasonable efficiency is to be maintained in our offices, a person with "average" performance needs to be told that he must improve himself in order to be counted among the efficient workers of the university and to earn promotion on merit basis.

Though it may not be agreed to readily, the fact remains that statistically speaking half of the employees are "average" or "below average" in their overall performance if they are rated *sincerely*. When the human resources are of such low calibre, no department can function with reasonable efficiency.

Unless, therefore, there is a positive system of reward, it is not possible to have the people motivated to hard work and make them realise that they must learn to do their work and various methods rules as aids for doing their jobs accurately and swiftly. The system must isolate duds and incompetent workers. They should not be exposed out of revenge and left at that. In fact all-out efforts should be made at the university level to help them to catch up with their other colleagues who are on the other side of the battlefield, fighting as successful victors against administrative inefficiency or corruption. ☐

Teacher Productivity & Academic Standards

R. Dwarakinath*

B. V. Venkata Rao**

Earlier attempts at improvement of academic standards

There is a vast volume of literature developed in the years after independence on improvement of our educational system so as to be socially relevant. Relevance in the context of a vibrant, dynamic, forward-looking society includes accent on generation of knowledge and value system of immediate significance to meet the day to day problems of the country as also to meet the long term requirements in nation building process.

If we look at the several documents produced at enormous national effort, including Radhakrishnan and Kothari Commission Reports on University Education, the emphasis has largely been on improvement of certain facilities in terms of larger financial allocation for buildings, teachers, salaries, equipment, organisational and functional autonomy and the like. The UGC report on standard of university education no doubt elaborates on maintenance of academic standards as applied to admission, courses of study both at the undergraduate and postgraduate levels including research, particularly, at the postgraduate stage, medium of instruction, examination reform, organisation and administration of colleges and universities and accreditation mechanism to contain mushroom growth of colleges and universities.

The Kothari Commission Report in its 36 appendices has sought to assemble extensive data on student enrolment, curricular content as well as machinery to formulate the same, the periodic back and forth excercise on the duration of instruction like two-year Intermediate and two-year Degree, one year PUC and three-year Degree, admission qualifications for various degree programmes and the rigours of examination all of which are intended to contribute to improvement of quality of the products going out of the portals of Universities and Colleges.

Teacher building

As for the teacher component of academic standards, the thrust appears to have been mostly directed towards raising of the status of teachers through economic and social benefits like higher pay-scales in accordance with UGC periodic revisions, promotional prospects, salaries in relation to cost of living, welfare services, conditions of work, including permission to accept consultancy and part-time work to augment their incomes and such other matters. It has also been conceded that teachers could organise themselves to promote their professional and service interests.

While the recommendations to acquire an economic and social status for the teacher is unexceptionable, the accent on responsibilities on the part o teachers and students in the renovation of highe education in the country has been referred to jus in passing as could be seen by the statement "I we may say so as a challenge to the conscienc of University men and women and we trust it wil be taken up in all seriousness". This manner o thinking is in consonance with the traditional veneration in which a teacher is held in Indian way of life He is in reality considered to be Brahma, Vishnu Mahesware and ultimately Para brahma as conveyed in the prayer we enchant everyday to salute the teachers, viz., *Guru Brahma, Guru Vishnu, Gurudevo Maheswara, Guru Sakshat Parabrahma, Tasmai Sri Gurudev Namaha.*

Even as late as 1941, the celebrated Administrator-Statesman Sir Mirza M. Ismail in his convocation address to Jaipur University said "select first class men, give them good treatment and leave them alone and all will be well with the Universities". Naturally, such expectation was in the context of the self sacrificing and unflinching dedication of teachers to learning and teaching in the larger good of society. The Kothari Commission is not firm on this point. It recognises the declining educational standards and ascribes them to such causes as physical disabilities, arising out of economic and sociological background of students who enter the Universities, and hesitatingly concedes the fact that the academic excellence, taken, all in all is confined to minority of teachers and students who have to keep it alive against downward pressure of discouraging circumstances. The report attributes the malady to the hang over of the pre-independence colonial policy of lack of interest in training young Indians for top leadership positions as they were meant exclusively for the British personnel, and our university trained men were meant for subordinate and secondary cadres, needing no rank calibre. But the fact remains that putting the teacher in the centre of focus in the educational system, creating more facilities, elevation of his status and improvement of salary-scales have not in themselves automatically resulted in better educational products.

Elite institutions

In order to overcome this situation in the context of scarce resources and acutely scarce top-class talent in the country, a vigorous programme of investing attention on selected institutions to provide first-rate postgraduate instruction comparable to that in educationally advanced nations was suggested. The result is the Delhi University, Jawaharlal Nehru University, centrally administered University level Institutions like network of IITs, centres of excellence in specialised areas in certain old universities and the newly started Agricultural Uni-

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**Editor, University of Agricultural Sciences ersities on the model of Land Grant Colleges of America, established in close foreign collaboration. These have been functioning over the past two decades, and though many of them did start well, have currently deviated from their founding objectives and standards, and possibly are no better than the multitude of other universities with no relevance to either social or economic lift of the region in which they are located lift them from their mediocre operations to become positive dynamic instruments of leadership for national emancipation.

Many universities are staffed with persons with impressive credentials for being thereunder the UGC sets of formal standards for recruitment. To that extent, it is all exceedingly fine. But, in terms of delivering goods namely, good teaching, standard research and its effective outflow to serve as a base for productive technology either in industry or in agriculture it may not be wrong to say that their performance needs improvement.

Need for a new look into the promotion of academic standards

It is time, we think of ways and means of continuously monitoring the productivity of the universities in relation to the specific objectives set before them.

It is not that we have no such mechanisms in operation at present. The UGC visiting teams are charged with responsibility of looking into the working of the institutions before they recommend annual allocation of grants. There are accreditation committees which have a say on staff recruitment policies. All this has been reduced to more or less formal annual features, unable to exert beneficial influence on the occasional deteriorating trends in University functioning.

This paper presents an attempt initiated by the University of Agricultural Sciences, Bangalore to prepare an inventory of accomplishments of the academic staff so as to provide an opportunity for every individual to look back, and state on his own, what he or she has been able to do in the past 10-15 years after the individual's entry into the university.

The UAS was established in pursuance of Act 22 of 1963 and started functioning from October 1, 1965 with the transfer of colleges of Agriculture at Hebbal, Bangalore and Dharwad and the Veterinary College at Hebbal along-with 35 Research Stations located in different parts of the State and 45 Schemes under the sponsorship of the ICAR and other agencies. The Marine Products Processing Centre was transferred later. The objectives and responsibilities as adumbrated in the Act and Statutes provide for higher education in the area of agriculture in its broadest sense, expansion of horizons of knowledge through systematic research and transmission or extension of the same to the rural and urban people for practical adoption.

In pursuance of the above goals set before the University, the teaching, research and extension education setup was thoroughly restructured, including initiation of activities in newer areas like, fisheries, home science, horticulture, agricultural marketing and cooperation, agricultural engineering forestry, sericulture and dairying. In the past over 14 years, the university could legitimately claim its share in the substantial onward march of agriculture in the State.

UAS has qualified staff

In order to implement the stupendous task, the university has endeavoured to induct highly qualified and competent staff in the various specialised disciplines.

As for teaching, there has been complete change over from the traditional annual examination-oriented pattern to teacher-centred internal evaluation system. The university has been able to produce sizeable number of qualified young men and women including well over 600 postgraduates of whom more than 60 are Ph.Ds. In the matter of research, several new high production crop and animal strains enriching the economic condition of the farmers, have been evolved. Innovative extension education programmes, including systematic training support to field functionaries of the State Development Departments like agriculture, horticulture, animal husbandry, and fisheries have been under way. These are certainly the result of the radical recruitment policies and procedures adopted by the UAS after its inception in 1965.

Evaluation of individualwise accomplishments

The total number of staff recruited in this period of the rank of assistant professors and above easily exceeds 500. It was felt that an appraisal of their individual accomplishments as against overall institutional contribution would help in understanding the productive efficiency of the new system of direct recruitment over the traditional promotional filling up of positions by seniority-cum-merit in vogue earlier. Such as appraisal would also help categorisation of workers into higher, medium and below the mark groups. It is believed that such an appraisal would provide opportunities for improvement of those who are in the lower brackets of productivity and materially upgrade the total academic output.

A teacher in an Agricultural university unlike his counterpart in the traditional universities is obligated to simultaneously engage himself in teaching, research and extension activities in his individual area of specialisation. This philosophy of integration of these triple functions, is basic to the concept of service-oriented functional institutions such as these, charged with the responsibility of all round emancipation of rural and urban common people.

In order to elicit functionwise contribution of individual teachers, a proforma (Appendix—I) was evolved and it is expected to provide a broad spectra of total activity of a teacher in teaching, research and extension including associated academic contributions. Information was sought to be obtained from teachers at all levels not excluding the Heads of Institutions and other Academic Administrators since it was felt that they would lose title to academic leadership, the moment they lost their interest in teaching which includes research and extension.

The response received so far amounts to about 25 per cent. It is expected that further persuasion may improve matters and we may get sufficient material for a meaningful analysis of the problem. The strength of teaching staff in the UAS in the cadre of Professors, Associate Professors and Assistant Professors is 82, 158 and 413 respectively. To-date, the returns received are 22, 47 and 85 respectively in the above categories.

As a preliminary effort, an analysis of returns from the category of Professors has been done by assigning points for various categories of work mentioned in the proforma (Appendix-I), and the data is presented in Appendix-II. The exercise is of a very tentative nature and it would not be meaningful to draw conclusions for generalisation. However, the approach of providing a teacher a periodical opportunity once in 5 years for stock taking of the various facets of ones own work appears to be desirable. It also points out to the possibility of alerting the University and the college teachers to their academic and social obligations and thus lay the foundation for a stronger and purposeful University community.

Appendix—I

INVENTORY OF ACADEMIC ACCOMPLISHMENTS OF UAS STAFF

1. Name and Present Designation :
2. Assignments held before joining the UAS :
3. Posts held in the University with duration :
4. Teaching, Research and Extension Activities from 1-10-1965 :
   - (a) **Teaching**
     - (i) **Courses offered from 1965-66 to date:** Year; Title of the Course; Credits;
     - (ii) Postgraduate guidance with title of theses produced.
     - (iii) Innovations introduced in Theory and or Practical Instruction.
   - (b) **Research**
     - (i) Area or areas of specialisation :
     - (ii) Papers published—list may be appended as per MJAS format classified according to specialisation stated above:

       Note : Papers presented at Seminars, Conferences, Workshops etc., may be indicated separately.
     - (iii) Bulletins & Books published.
     - (iv) A brief 100-word write-up on the impact of their research either on advance of knowledge or its practical significance as relevant to agriculture and rural development.
   - (c) **Extension**

     Whole time extension workers may indicate the projects they were involved in and the thrust they had on production programmes. Others may indicate their specific participation in textension activities, including participation in training programmes.
5. **Academic distinctions**
   - (i) Membership of professional bodies including the office they held. They may also indicate activities such as membership of visiting and Review Teams.
   - (ii) Specific recognition such as Awards:
   - (iii) They may state the names of technical journals they are obtaining :
6. General and popular Science writing—list of articles may be appended.
7. Intellectual excellence—a note on academic activities which have helped them and incidentally the UAS to become known to the general public :
8. Any other information:

(SIGNATURE)

Appendix-II

PRODUCTIVITY OF UAS PROFESSORS

Teacher 1	Year of joining UAS 2	Course offered Credit Hr. 3	P.G. Guidance 4	Innovative theory & Pract. 5	Papers published 6	Papers presented at Symposium. 7	Bulletins & Books 8	Book Reviews 9	100 word write up on the impact of Research 10	Organisation of Symposium etc. 11	Membership of provisional Bodies 12	Awards 13	Subscription to Journals 14	Ednl. or Science writing 15	Intellectual Excellence 16	Credit for non-teaching responsibility 17	Total 18
P_1	1971	62	2	—	20	3	—	6	3	1	5	—	2	1	—	24	125
P_2	1967	120	3	2	13	6	5	—	—	2.5	8	—	2	1	—	36	189
P_3	1970	54	10	—	19	9	13	8	4	3	8	—	5	12	—	135	280
P_4	1965	133	14	1	54	31	13	18	4	5	12	—	5	105	3	210	608
P_5	1966	107	8	2	17	7	3	—	3	2	11	—	5	—	—	—	165
P_6	1965	167	25	3	14	6	5	—	3	3.5	—	—	—	1	—	36	264
P_7	1965	60	11	—	59	54	5	—	4	2	—	3	—	66	3	135+9	401
P_8	1965	74	11	0.5	22	3	2	—	2	2	—	2	1	5	2	55	182
P_9	1969	160	13	—	33	12	—	2	3	4	—	6	—	3	3	12	251
P_{10}	1965	9	4	1	47	15	2	—	3	—	—	—	—	—	—	12	93
P_{11}	1965	129	3	1.5	13	—	—	—	3	—	—	—	—	—	—	42	192
P_{12}	1965	276	26	1.5	27	32	1	4	3	3	4	—	4	2	25	24	435
P_{13}	1967	173	2	1	10	6	1	—	3	5	—	2	8	1	1	12	225
P_{14}	1970	144	—	1	8	14	2	8	3	2	4	0.5	6	6	—	90	289
P_{15}	1974	190	16	—	65	1	—	—	3	3	4	—	—	5	—	15	302
P_{16}	1967	9	2	2	94	6	8	—	4	4	—	2	7	38	4	180	360
P_{17}	1965	131	6	0.5	40	3	3.0	—	5	25	4	1	4	3	—	12	227
P_{18}	1966	27	2	1	19	6	—	—	3	4	25	3	—	1	—	60	151
P_{19}	1965	155	—	8	1	19	6	—	—	3	25	3	—	1	—	9	230
P_{20}	1970	78	—	6	0	24	6	—	0	3	4	5	—	4	4	165	289
P_{21}	1968	15	—	20	1.5	39	2	2	0	4.5	3	4	2	2	7	165	268
P_{22}	1965	27	1	1	1	12	2	2	3	3	4	2	2	7	—	135	202

Note

(i) 1 Point is allotted for each Cr. hr. of teaching (ii) P.G. Guidance—1 point for each thesis, (iii) Innovation in teaching upto 2 points, (iv) Papers published/presented/Book/Bulletin—1 point each, (v) Writeup on the impact of research work—upto 5 points, (vi) Extension work of teachers upto 5 points, (vii) Awards—1 point for each, (viii) Membership of Professional bodies—1 point for each, (ix) Tech. Journal subscribed—1 point for each, (x) Popular Science writing—1 point, for each article, (xi) Whole time, Res./Extn./Admn. responsibilities including editing—15 points per year, Head of Department is given 3 points per year (Column 17).

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Environmental Pollution—A Constraint to Development

S. S. Solanki*

There is strong relationship between nature, environment and society. The development of a society depends upon the environment and its development operates within an "eco-system". The evidence of urban slums shows that if the people are living in an ugly environment, not only their physical and mental capabilities and behaviour will degenerate but also will lead to the evolution of an ugly society. Therefore, there is an urgent need for considerable attention to be paid to understand all aspects of our surroundings in totality. In the past, little efforts have been made in this direction. Only recently, most of the countries are alarmed by the problems arising from pollution. The environmental deterioration through increased industrialisation and urbanisation earlier restricted to many highly developed and industrialised countries, is spreading in developing countries too. Ecologists are yet to provide a satisfactory solution to the management of environment.

"The limits to growth" was the result of the project on the predicament of mankind, sponsored by the Club of Rome in 1971; The report concluded that :

1. "If the present growth trends (exponential) in world population, industrialisational, food production and resources depletion continue unchanged, the limits to growth on this planet will be reached within the next one hundred years. The most probable result will be a rather sudden and uncontrolable decline in both population and industrial capacity.
2. It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is a sustainable into the future. The state of global equilibrium could be designed so that the basic material needs of each person on earth are satisfied and each person has an equal opportunity to realise his individual potential.
3. If the world's people decide to strive for this second outcome rather than the first, the sooner they begin working to attain it, the greater will be their chances of success".

I. URBAN POLLUTION

After independence, India has been planning the development based on western model. Industrialisation and urbanisation are the two main themes of such a development. They are also the major constituents contributing to the environmental pollution.

(1) **Industrialisation**

India being a developing country, has started with its industrialisation programme only 30 years ago. Problems of environment pollution due to industrialisation are not acute at present as is evident from the data given in Table-I (given on page 305).

However, the rate at which we are setting up the industries, if adequate attention is not paid to the planning of industries in the sense of siting locations, use of raw materials and choice of technology, right now, it might lead to the concentration of industries in a few pockets, causing depletion and pollution of natural resources of air, water and land. It is also evident from the experience of the developed nations that, it is an herculean task and costly affair to avert the disaster of Industrial Pollution. It is, therefore, desirable for developing countries to plan carefully their industrialisation programmes from the beginning itself. In case of molasses distillaries the BOD is as high as 30,000 to 70,000. In addition, the effluents contain certain chemicals of calcium, potash, sodium salts, iron and acid solubles which make the environment unfit for fish culture. The water pollutants from steel industry vary from more rise in temperature of water to toxic chemicals. These are, tar, sulphuric acid, phenol, cyanides, hydrogen sulphide, bansol, thiocyanates, thiosulphates etc. Suspended and colloidal solids emanate in this industry by either washing the raw materials or products or scrubbing the dust and gases with water.

The major effects are :

(a) Toxicity to acquatic life;
(b) lowering of dissolved oxygen in the receiving water course;
(c) deposition of suspended matter on the bed of receiving water course;
(d) causing taste and odour problems in receiving water;
(e) coal tar, choking pipes and waste treatment appurtences;
(f) raising the temperature of the receiving water; and
(g) floating of oils and grease of water leading to ugly oil slicks and poor aesthetics.

Types of pollutants

The major pollutants are of two types. First group, includes major combustion products like carbon monoxide, carbon-dioxide, oxides of nitrogen, oxides of sulpher and hydrocarbons. These pollutants relatively have short half lives. Second group of pollutants are those which have longer half-lives such as pesticides, heavy metals and a wide variety of ever changing chemicals emitted by high technology industries which are small in quantities but often highly toxic in nature.

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(2) Urbanisation

The urban region occupy about 0.3 per cent of world's land area and has about 40 per cent of world's population. In India about 109 million people live in big cities. Out of which 35 to 42 million live in slums and in transitional settlements. At the present rate of growth it is estimated that the total number of people living in cities will be 278 million while those in slums will be 72.5 million by 2001 A. D. Further the condition in urban areas in India has been aggravated due to lack of basic amenities, as, only 57 per cent of Indian towns are provided with water supply serving little more than 80 per cent of population and hardly 7 per cent of Indian towns are provided with sewerage facilities serving only 38 per cent of population. In addition, the slum squatters further pollute the environment. With the result, a large number of people suffer from water borne and air borne diseases.

Another important factor which is adding to the environmental problem is that the cities are not in continuance with eco-system. They lack sufficient green plants to support the human and animal population. In order to survive, they depend on rural areas outside their boundaries, sometimes ranging over the entire world. Besides food, they import fresh air, water, raw materials and energy resources. Simultaneously, they must export their solids, liquids and gaseous waste products to outside areas.

The problem of air pollution is also signalling an alarm in cities. In Ahmedabad, dust fall on the average is 196 tons/sq. miles/ month, and the figures for Delhi and Kanpur area 106 and 114 respectively. Thus the suspended particles are above the permissible level. It is also said that carbon monoxide level of Calcutta is higher than that of New York and London. In Delhi, Indraprastha thermal power station discharges over 60 tons of sulphur dioxide and 45 tons of soot per day. Carbon dioxide effects the heat balance of atmosphere resulting in the increase of atmospheric temperature. Carbon monoxide effects on central nervous system. Sulphur dioxide combines with moisture in the air to form sulphuric acid mist which can cause several deaths; such episodes have already occurred in London and Donora. Sulphur dioxide and nitrogen dioxide cause acute cases of fibrogenesis of intestinal tissues and lung cancer. Clouds of cool dust and flyash cause various thalmic and pulmonary diseases and reduce the transmission of solar radiation. In India every year, industry adds to the environment one million tons of hydro-carbons, five million tons of particulate matters and quarter million tons of hydrogen sulphide. All these show that we are marching to witness environmental disaster.

II. RURAL POLLUTION

(1) Life style

The problem of pollution is becoming serious in rural areas too. Although ample sunlight, fresh air, clear streams, home grown food create a picture of robust, happy and healthy families, enough to attract many city dwellers to return to the soil, but the life in villages is exposed to hazards of air ladden with pollens, mould spores, dust, insecticides, contaminated drinking water and inadequate diets. In most parts of the world the farmers' diet is distressingly poor affecting their health adversely. With the result, they usually retire from active farm work at young age on account of ill health. Lack of education about health and cleanliness, lack of medical facilities, non-availability of proper drinking water, rapid growth of population, lack of sanitation facilities, ill-ventilated houses and rural life style are contributing to the rural pollution considerably.

(2) Agriculture

The most important factor which is contributing to the growing pollution is of the fact that agriculture is fast becoming an industry. About 80 percent of population is dependent upon agriculture for earning their living. The changes, that have taken place during the last 30 years indicate that the villages have progressed because of modernisation of agriculture. During the process of modernisation of agriculture two types of technologies have been used:

(a) land using technologies which increased production by bringing new land under production; and

(b) land conserving technologies which rely on achieving the production increase by applying non-land resources to the existing land base.

The environmental problems with land using technologies are primarily those associated with wind and water causing loss of habitat and erosion of soil. During the process, a substantial portion of soil is washed into the oceans or other water reservoirs causing damage to the rivers, lakes and other water reservoirs. It also transfers the phosphate fertilisers from fields to streams, lakes, reservoirs where it supports unwanted growth of acquatic plants.

The environmental problems associated with land conserving technologies are those resulting from the use of fertilisers, irrigation and pesticides. The use of chemicals fertilisers is slowly increasing. It is experienced that the plants do not use all fertilisers applied and a large amounts of unused fertilisers is leached down to ground water and add to environmental problems. The nitrogen fertilisers reach well waters causing nitrate pollution. Nitrate contaminated drinking water has been associated with blue baby disease encountered in several parts of the world.

Pesticides also cause unintended damage to plant and animal life, to human and even potential harm to the genetic stock of the race. In India the use of pesticides in agriculture on commercial scale was started in late forties and use has greatly increased. In 1961-62, 37,980 metric tons pesticide formulations were used which increased to 77509 metric tons in 1970-71. The increasing and continuous use of pesticides like DDT, eldrina and dicldrine etc. for plant protection and mosquito control, find way into the human body and cause a variety of diseases like cancer, lever damage, brain damage, and slow but painful death. The rural environment has to be protected from these toxic chemicals by gradually phasing them out and by adopting some biological measures for pest control. It is surprising that the insecticides which have been banned in America and Europe are still being imported in India. A chemical regarded unsafe to the environment anywhere on earth in unsafe for India, too. The introduction of tractors, harvesters, threshers may help to save labour but these may aggregate the problems of unemployment in rural area. Tractors ploughing may be almight for virgin lands but it may prove harmful in the long run, to land under cultivation for countries. It is due to the fact that ploughing by tractors turns down the surface fertile soil and brings the sterile deeper soil on the top. Thus land under mechanical ploughing may require more fertilisers for sustained yields.

Swamps and marshy land, soil erosion, deforestation are creating serious ecological imbalances and contributing factors to the problems of environmental pollution. In order to provide jobs, it is essential to create an industrial base in the rural area. At the same time, it is essential and desirable that while planning for the development of rural industries care should be taken that rural environment does not get polluted with undesirable effects of industries namely different kind of waste gaseous products, waste-water and soil pollutants.

(3) **Population**

The continuous and rapid growth of population has created major problems of rapid depletion of internal and external resources. Thus existing greater pressures on the environment, more dependence on continued rapid technological development to solve related problems and at the same time continued postponement of the solution of social problems. So long as the population growth continues these problems will increase thus forcing changes in present way of life. In the long run, population growth will be a singlemost important factor determining resources adequacy and environmental quality. Therefore, there is a need to check population growth. With increasing literacy rate and growing awareness about the advantages of small family, a decline in population is expected. However, some incentives for motivating people to adopt family planning measures like rebate or remission in land revenue or income tax, and the unmarried individuals, or issueless couples and couples following family planning measures should be given preferences in jobs and providing other amenities.

The control of pollution in both the urban and rural areas has to be tackled differently as the nature and content of pollutants are quite different in these areas. The urban area is largely the centre of industrial production and the environmental pollution is the result of adoption of large scale technologies especially the chemical based technologies. There could be several ways to either restrict or eliminate the pollution depending upon the development objectives. Technology assessment and development of appropriate technology could be given due consideration. In the rural areas pollution is largely due to lack of awareness of environmental education cultural practices and poverty and also due to widespread lack of basic amenities. Besides agriculture, the non-agricultural production should be encouraged to increase the income level of the poor people in the villages. Certain socio-political actions such as land reforms, capital loan, skill development etc. will facilitate to remove the structural poverty in the villages. All these will ultimately be reflected in the improvement of their quality of life.

The Government of India has already recognised the importance of environmental management and has taken some steps in this direction. India is participating in United Nation Environmental programmes which could help in promoting the application of the environmental management. It has also set up a Committee on Environment—Planning and Coordination. This attempts to co-ordinate and identify new areas of research and makes suggestions for legislation. A few important aspects being looked after by this Committee are :

(i) promotion of environmental and ecological research;

(ii) environmental project appraisal and guidelines for incorporating environmental consideration in development planning.

(iii) requirements for environmental management institutional support, legislation, education and publicity etc.

The CSIR has undertaken a number of projects in its laboratories to tackle the problems of environment; Indian Toxicological Research Centre (ITRC), Lucknow, has started research in biological evaluation of pesticides, evaluation of flora for pollution resistance, toxicity of industrial dusts, dyes and intermediate dyes, pesticides and health hazards in industries and mines. IIRC is also planning to organise a seminar on sugar industry and distilleries and pollution. Research on treatment of effluent of Leather Industry is also going on in Central Leather Research Institute (CLRI), Madras, National Environmental Engineering Research Institute (NEERI), Nagpur, is the most important among the laboratories concerned with the studies of environmental sciences. It has monitoring of air quality, industrial waste treatment, water treatent plants and their operation, solid waste manage-ent, rural sanitation project, defluridation of water c. on its agenda. In addition, it has also planned vironmental impact analysis studies in the country.

Another organisation whose contribution matters om the control of environmental pollution angle the Indian Standards Institution. It has worked n the following aspects :

i) Methods for measurement of air pollution (for details please see IS 5182).
ii) Criteria for controlling pollution of marine coastal areas (IS 7967).
ii) Methods for sampling and test for industrial effluents (IS 2488 Part I to Part-V).
v) Tolerance limits for
  (a) industrial effluents discharged into marine coastal areas (IS 7968)
  (b) industrial effluents discharged on land for irrigation purposes (IS 3307).
(v) Guide for treatment of effuents of various industry.
  (a) On sugar industry.
  (b) Pulp, paper and board industries.
  (c) Tanning industry.
  (d) Distillery effluents.
  (e) Electroplading.
  (f) Steel effluent.

At present, most of the environmental pollution control activities are based mostly on the imported know-how. These technologies have limitations such as empirical basis, equipment too costly and efficiency which could not be maintained for lack of skilled personnel to attend to such sophistication. It will also result in a continuous drain of foreign exchange.

Keeping this in view, it is at last becoming clear that, only by the adoption and speedily implementation of environment development policies can the real needs and legitimate demands of the world's poor be met and the longterm health of the natural system upon which we all depend will be safeguarded.

What is needed is the use of indigenous methods and technologies to preserve environment. It will not be out of place if the specific measures which Mrs. Indira Gandhi, the Prime Minister of India has suggested recently to the State Governments for preserving the environment are included here. These steps desire that the responsible forest officers having sense of duty and understanding relating to wild life and eco-system should be posted. Even the forest development corporation must take on war footing plantation on hilly slopes catchment areas and from where deforestation has taken place. A massive programme of social forestry should be taken up to educate the village communities and also to create alternative raw materials for their requirements.

No doubt existing regulations and security arrangements are lacking important facts. These may be amended to bring into focus the necessity and urgency of a good and clean environment for development. The problem, though serious in magnitude can be remedied provided there is "will" to do the job. ☐

TABLE I

Profile of Characteristics of Effluents

Name of Industry	**pH**	**SOLIDS**			**BOD**
		Suspended solids	Volatile	Total	
1. Sugar*	4.6—7.1	220—800	400—2200	800—3500	1100—2000
2. **Tannery****					
(i) Soaking	7.5— 8.0	2500—4000	—	8000—28000	1100— 2500
(ii) Liming	10.0—12.5	4500—6500	—	16000—45000	6000— 9000
(iii) Deliming	3.0— 9.0	200—1200	—	1200—12000	1000— 2000
(iv) Vegetable Tanning	5.0— 6.8	5000—20000	—	8000—50000	6000—12000
(v) Pickling	2.9— 4.0	600—6000	—	16000—42000	600— 2200
(vi) Chrome Tanning	2.6— 3.2	300—1000	—	2400—12000	800— 1200
(vii) Composite (incld. washing)	7.5—10.0	1250—6000	—	10000—25000	2000— 3000
3. **Paper Industry*****					
(i) Sulphate	6.9— 9.8	580—2330	—	—	155— 421
(ii) Sulphate	5.8— 7.2	950—3140	—	—	150— 430
(iii) Tissue	8.2— 9.0	240—1145	—	—	65— 265
(iv) Straw-board.	7.8—12.9	940—3040	—	—	660—3655

1. IS*	4903	1968
2. IS**	5183	1977
3. IS***	5061	1968

Tolerance limits prescribed in

	IS 3307	IS 7967	IS 7968
pH	5.5—9.0	6.5—8.5	5.5—9.0
BOD	500	5	100
Total Suspended Solids	—	—	100

CAMPUS NEWS

Jammu Organises Semester System Appreciation Programme

To create greater awareness about the objectives, mechanics, processes and procedures connected with the semester system proposed to be introduced in the university, the Jammu University organised a two-day "Semester System Appreciation Programme" for college teachers. Inaugurating the programme, Prof. S.C. Dube, Vice-Chancellor of the University strongly advocated the innovative stance. He said that in this overhaul of our academic programme and strategies, the well-measured and well considered steps were essential so that our well intentioned efforts might not meet a crash. Without being prisoners of traditional educational patterns we should also be careful not to transplant the foreign ideas and models in toto because Indian situation was different from other places. For the success of the semester system we have certain preconditions like promoting a genuine learning ethic, having self-contained semester courses divided logically into units and modules, educational technologies capable of achieving the objectives of education and the system of assessment which inspires faith and credibility.

Shri K.K. Gupta, Director of College Development Council, spelt out the role and function of the Council. Giving the objectives of the Appreciation Seminar he elaborated the inputs and infrastructures, imperatively required for the effective and efficacious implementation of the semester system.

Prof. V.R. Taneja, who was the Director of the Seminar, urged the faculty to build the necessary climate for serious and constructive thinking for implementing semester system so as to develop in them the necessary skills for restructuring the courses as well as for re-vitalising the teaching-learning modalities.

Five senior academics from each one of the colleges affiliated to the university participated. They had an opportunity for indepth understanding of the rationale and the superiority of the semester system over the traditional system. Three resource persons, one each from Jawaharlal Nehru University, Kashmir University and Kanpur University were also invited to give the benefit of their expertise and experience.

HAU's emphasis on biogas technology

A survey conducted by the Department of Microbiology and the Department of Extension Education of the Haryana Agricultural University has revealed that in view of petroleum crisis which necessitated development of alternate energy sources, the production of biogas from cattle waste has drawn much attention. India has a large amount of cattle waste which can be effectively utilised for the production of methane particularly in the rural areas. At present most of the cattle waste is burnt as fuel with complete loss of fertilizer value. Recycling through the biogas plants will not only save the valuable fertilizer but will also generate fuel for home consumption. In view of this significance, the university has intensified its research on biogas technology and the ICAR has also sanctioned a centre for microbiological research on biogas at the university.

UGC concession to weaker section

The University Grants Commission has decided to permit the universities and their affiliated colleges to utilise a part of the library grant for the purchase of Braille typewriter, dictionary and cassette recorders for use by blind students. The Commission has also agreed to extend the time limit for the utilisation of grants already paid to colleges during the Vth Plan period for purchase of books, journals and scientific equipment.

The Commission has also decided that the condition of minimum enrolment of Scheduled Tribe students in degree classes may be revised to 1/3rd of the total enrolment.

Recent developments in molecular biology

Delivering the convocation address at the Osmania University, Hyderabad, Prof. V. Ramalingaswami, Director-General of the Indian Council of Medical Research and President of the Indian National Science Academy, said that India had to develop a whole range of skills in fundamental and applied biology to solve its health problems and speed up overall development. Referring to the enormous strides made in fundamental biology over the past two decades he said it was possible now to take the human genes apart, analyse them and incorporate them in the bacteria so that the bacteria can make the end products of gene action. These possibilities looked limitless at the moment heralding spectacular advances in the entire field of human disease by the new technology of Recombinant DNA.

Prof. Ramalingaswami added that the benefits of discoveries in molecular biology might hold out answers to the genesis of cancer, problems of ageing and the reasons for high blood pressure, heart attacks and strokes. Though Recombiant DNA technology was hardly seven years old, it had already been demonstrated that it was possible to reorder genetic material at will. He said that the benefits of genetic engineering were not necessarily confined to medical and health fields. Biotechnology was yet another major attraction which could be used for recycling agricultural and industrial wastes.

The Vice-Chancellor of the University, Prof. G. Ram Reddy, said that in order to promote research in areas which are of immediate relevance it had been decided to establish two centres—one for energy studies and another for pollution studies. These would be inter-disciplinary in character. Presenting the annual report, the Vice-Chancellor said the university had organised 22 extension lectures, 24 seminars and symposia and one international conference on South Asian languages and linguistics during the course of the year. He said that in addition to the PG courses already established at Godavari Khani, Bhiknoor and Kothagudem, it was proposed to start one more course at Zaheerabad in Medak district.

ICMR suggests guidelines for medical experiments

The Indian Council of Medical Research has criticised medical experiments on prisoners, children and mentally retarded patients. A set of guidelines prepared by it on the ethics of medical research on human beings says that research on prisoners should never be carried out as it is not only difficult to obtain informed voluntary consent from them but inducements offered to the prisoners for taking part in the trial (research) would make it unethical to include such persons as subjects in a research programme.

According to the guidelines the research on children and mentally retarded people should be carried out only after it has been established that the research on a new treatment could cure the patient and the clinical research being carried out would add more information about the condition or disease from which the patient is suffering. Voluntary consent must be obtained from the guardian or the next of kin of such a patient before conducting any experiment on him and if the patient has intervals when he is in possession of all his faculties, then his consent during such a period should also be obtained.

The guidelines have been prepared by a committee set up by the ICMR to help the Government formulate a national policy on the ethics of medical research on human beings. These have been approved by the Scientific Advisory Board of the ICMR and have already been sent to the Government for action. However, according to the ICMR, the Government is not obliged to accept the guidelines.

Prof. V. Ramalingaswami, Director-General of ICMR said in New Delhi that this was the first time that such a code of ethics had been prepared. So far the ethics of each experiment was left to the conscience of individual doctors or to the ethical committees, wherever they existed. He said as far as he knew only All-India Institute of Medical Sciences, New Delhi and the Postgraduate Medical Institute, Chandigarh had such committees.

Prof. Ramalingaswami said that the need to draw up a code of ethics arose following increasing concern almost everywhere in the world over the manner in which experiments on human beings were conducted. The guidelines were based on the principles contained in the 1964 World Medical Association declaration of Helsinki. The Committee which prepared the guidelines was set up in 1975 under the chairmanship of Dr. S.G. Gajendragadkar. However most of the work was done after it was reconstituted with Mr. Justice H.R. Khanna as its Chairman.

Prof. Ramalingaswami said that no drug should be used in an experiment unless it had been cleared by the Controller of Drugs. Any proposal for evaluation of drugs from traditional systems of medicine must be approved by the ethical committee of an institute.

London School of Economics plans more courses for overseas students

The London School of Economics and Political Science is expected to enrol more overseas students from this academic session. The Director of the School, Prof. Ralf Dahrendorf said that the school hoped to increase the proportion of overseas students from one-third to about forty per cent of the total student body during 1980-81. To attract more overseas student, the entry for the popular one-year general course had been doubled. Postgraduate diploma courses were also being introduced particularly for overseas students who would like to come for one year but who would find it difficult to complete an MSc in that time. So far the following new diplomas had been planned for the next session : accounting and finance; business studies; economics, econometrics; geography; international and comparative politics; logic and scientific method; social philosophy; operational research; management sciences and sociology. The largest number of overseas students in recent years have come from Asia.

Planning Commission appoints agro service task force

Dr. K. Kirpal Singh, Director, Food Technology, Processing and Marketing, Punjab Agricultural University, has been nominated as member of the Task Force set up by the Planning Commission, Government of India, on Agro Service Centres for the Sixth Five Year Plan.

The Task Force will assess services needed by the small and marginal farmers for crop production, animal husbandry and fisheries and also review marketing system for various commodities and suggest ways and means to increase returns to the farmers. It will further study crop losses at different stages and suggest organisational structure for various input services.

University of Malta renamed

The Old University, Malta, has ceased to exist with effect from the 28th of March, 1980 and a new university "The University of Malta" has been established. It was founded in 1592,raised to university status in 1769 and from 1937 to 1976 was called the Royal University of Malta.

In 1976, the Maltese Government created a New University out of the former Malta College of Arts, Science and Technology. The Government transferred to the New University many courses previously run by the original university and introduced a scheme of selection of students on a worker-student basis. The recent Act passed by the Government provides for radical changes in the tertiary education in Malta and the New University has been given all functions, property and other rights of the Old University together with the power to continue any instruction previously provided by that University and to take such steps and do such things as it may deem appropriate to wind up any outstanding affairs and liabilities of the said Old University.

Dr. Edwin Borg Constanzi was the Rector of the Old University from 1964 until the university ceased to exist. The present Rector Dr. D.H. Walwyn-James.

Abasama digital language

The Indian Institute of Technology, New Delhi, has agreed to extend institutional support for the development of Abasama Digital Language developed by Mr. Abasama. The language seeks to link all the languages of the world for direct telex, telecommunication, conversation, corespondence and translation by men or machines.

'Abasama' is a digital language with digits evaluated for root-part and grammar marker taking meaning as a constant. In brief it promises to provide a digital dictionary in all the languages with an alphabetical index without changing the digits.

ISM to organise course in Drilling Engineering

Under its Executive Development Programme, the Indian School of Mines, Dhanbad, would be conducting a course on Drilling Engineering from June 30 to July 12, 1980. The objective of the course is to search for minerals, underground water, mineral oil and laying foundation for dams and bridges. It is designed to help the Drilling Engineers to be abreast the technological advancements.

Further details with regard to course content, methodology, faculty, etc. may be had from the Registrar of the school.

Shri C.K. Jain, of the Department of Engineering & Mineral Machinery of the School will be the course coordinator.

Delhi to appoint information officer

The Executive Council of Delhi University has recommended the appointment of an Information Officer to help the Press and the public. The recommendation will be sent to the University Grants Commission and officials of the university hope that it will be accepted. This is the second time that such a recommendation has been made. In 1975, the Delhi University had advertised the post of an Information Officer but the salary offered was not enough to attract the right kind of people. This time the Executive Council has recommended a scale of Rs. 1100-1600 which is at par with that of the Deputy Registrar.

So far there has been no official spokesman of the university and by convention the Press is briefed by some senior officials.

MBA by correspondence

The University Grants Commission has approved the plan of the All-India Board of Management Studies for correspondence courses leading to the degree of Master of Business Administration. To start with the programme will be introduced in not more than three selected universities. The total number of candidates to be admitted initially will be two hundred. This will be in addition to the enrolment for the three-year correspondence course of Punjabi University, Patiala for M.B.A. which is open only to officers of the defence services.

The admission test for candidates will be similar to those held by the Indian Institutes of Management and some of the universities like Delhi, Bombay, and Panjab. The candidates will be expected to have work experience. The minimum duration of the programme will be three years. However, for those needing more time, modules will be developed on the basis of semester system to enable them to complete the programme within five years.

Legal literacy programme workshop

An All-India workshop on Legal Literacy in the context of National Adult Education Programme was held at Varanasi at the Law School of the Banaras Hindu University. Dr. L.M. Singhvi, President of the Supreme Court Bar Association while delivering the keynote address emphasised that the legal literacy was an integral part of adult education. Its objectives were simple, practical and urgent but the magnitude of its task was forbidingly massive as there was dearth of materials for dissemination of legal literacy. Dr. Singhvi added that the purpose of it was not to make every man a professional lawyer but to educate average citizens about their rights and obligations which they owed to the society. He stressed that every university should have its own legal literacy programme.

Dr. R.N. Saxena, Vice-Chancellor, Kashi Vidyapith inaugurated the workshop and Dr Hari Narain, Vice-Chancellor of the University emphasised that there was expliotation of average people because of his legal illiteracy.

Prof. L.R. Shah, Programme Adviser, Ministry of Education and Dr. M.L. Mehta, Dy. Secretary, UGC, were among those who participated in the deliberations of the workshop.

New building for NIS south centre

The National Institute of Sports will soon be starting the construction work for its Rs. 2.5 crore campus in Bangalore. The Centre would move to new campus on the outskirt of the city when the first phase of construction is completed within the next few months. Under the first phase a multipurpose gymnasium would be constructed for games such as badminton and table tennis. There would be a hostel for men, women and teaching staff.

Mr. Gurbax Singh, Deputy Director of the Centre said that in the first phase an eight-lane athletic track will be laid. This will later be converted into a Tartan track. There would be grounds for football and hockey, courts for volleyball, basketball, tennis, kho kho, kabbaddi and a cricket pitch. Due to lack of grounds and other facilities the Institute's south centre was not able to organise a number of coaching camps for national teams though climatic conditions in Bangalore were ideal.

Environmental course planned at Kanpur

A new course in environmental sciences will be introduced by Kanpur University in postgraduate classes from the next academic year. Dr. (Mrs) Hemlata Swarup, Vice-Chancellor of the university gave this information while participating in a seminar on pollution control held at Kanpur. She said that the introduction of the new course has the approval of the University Grants Commission she hoped that the students passing out after completing the new course would serve as consultants for affluent treatment in various industries and would check the pollution to a great extent. The university was keen to go ahead with its plans even if the State Government did not come out with adequate financial support.

B.Ed. by correspondence

The Syndicate of Andhra University has decided to start correspondence course in B.Ed. through the School of Correspondence Courses from the academic year 1980-81 for working teachers. This matter was also considered by the Board of Studies in Teaching Research. The Board approved the proposal.

UGC centres for science study

The University Grants Commission has set up two national centres in Rajasthan and Tamil Nadu at a cost of Rs. 20 lakhs for improvement of undergraduate science teaching. One of these centres, which are to serve as model points for the science improvement programme of the UGC, will be located in Rajasthan University and the other at Madurai University.

These centres will carry out, besides research and development work, curricular reforms and hold workshops for the benefit of teachers.

Eight such centres are planned to be opened by the Commission, two each for Physics, Chemistry, Mathematics and Biology. It is also proposed to have a national centre for production of teaching aids for higher education. These steps are a part of the college science improvement programme of the Commission which presently covers more than 175 colleges. The Commission spends about Rs. 3 crores a year on college science improvement programmes.

Research facilities in constituent colleges be to strengthened

Osmania University has decided to improve research facilities in its constituent colleges. Dr. G. Ram Reddy, Vice-Chancellor of the University, while inaugurating the silver jubilee celebrations of the Science College, Saifabad, said that research was confined only to Campus colleges. This was a wrong trend and should be rectified soon. He added that as

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Classified Advt.

(*Continued on page 315*)

not less than 3 years of teaching experience at postgraduate level.

PREFERENCE WOULD BE GIVEN TO SC/ST CANDIDATES WHO ARE CONSIDERED FIT IN RESPECT OF LECTURERS:

The prescribed form of application and full details regarding qualifications and experience required can be got from the undersigned on requisition accompanied by (a) self addressed envelope with postage stamps to the value of Re. 1/- affixed thereon and (b) State Bank of India Challan for Rs. 5/- (Account No. 1) or Demand Draft for Rs. 5/- payable at Madurai drawn in favour of the REGISTRAR, MADURAI KAMARAJ UNIVERSITY, MADURAI-625021. The number of the notification should be quoted in the requisition i.e. No. 2/V/Advt/80.

The last date for receipt of filled in applications is **20-6-1980**. Applications received after the prescribed date will not be considered.

B. Murugan
REGISTRAR

part of strengthening of research, improvisation of buildings of the constituent colleges would be taken in a phased manner.

The Vice-Chancellor thanked the State Government for its decision to increase the grants to college libraries from the current financial year. This would help the colleges to develop their libraries considerably during the next three years.

Two new universities for Karnataka

Two new universities will be started in Karnataka from the coming academic session at Gulbarga and Mangalore. Gulbarga University will have its headquarters at Gulbarga with colleges at Bellary, Bider, Gulbarga and Raichur districts. Colleges in this area are affiliated to Karnatak University, Dharwar, at present.

Konaie will be the venue of Mangalore University which will cover colleges in south Kanara and Coorg. These are now affiliated to Mysore University. A Bill for the creation of these two universities making jurisdictional changes in the existing Karnatak and Mysore universities is under the consideration of the legislature.

The new academic session will see five universities functioning in Karnataka located in Bangalore, Mysore, Dharwar, Gulbarga and Konaie (Mangalore). It is stated that the jurisdiction of the Karnatak and Mysore Universities has become unwieldy. The proposal has been backed by committees appointed by Karnatak and Mysore universities as well as a Commission appointed by the State Government. The recurring expenditure for the establishment of the universities at Gulbarga and Mangalore will be Rs. 84.35 lakhs and Rs. 83.54 lakhs respectively. The non-recurring expenditure on each university is Rs. 320.5 lakhs. A provision of Rs. 45 lakhs has been made initially in the 1980-81 budget.

Corrigendum

The Senate of the Agra University at its meeting held on 2nd February, 1980 decided to withdraw the Ph.D. degree conferred on Shri Ranvir Singh for his topic "Mechanised Famine in Northern India".

The above thesis was included in Bibliography of Doctoral Dissertations 1976-77; Social Sciences and Humanities published by the Association of Indian Universities.

Training Programme in Financial Management

(*Continued from page 295*)

18. Model Budgeting for Universities
19. System of Financial Administration.

The participating finance officers themselves were called upon to present the system of financial administration in their universities which was followed by a discussion about the situation in this regard in other universities. This enabled the finance officers to compare and contrast different systems of financial administration prevalent in various universities in India and evaluate the effectiveness of each. There was also a panel-discussion on the role and functions of finance officers of universities which would have enabled the participants to look at their own roles and functions critically and understand what roles have been envisaged for them in the Acts and Statutes of the universities.

The process of budgeting adopted by the universities and the changes needed in it have attracted the attention of the University Grants Commission for some years in the past. In fact about five years ago the University Grants Commission has already circulated a model budget which were tried out by the National Institute of Educational Planning and Administration (National Staff College at that time) among some of the universities and at present most of the universities prepared their budgets in the model budget circulated by the University Grants Commission. Some universities have been able to improve upon the model budget by incorporating additional details regarding expenditure on university education.

It is, however, to be pointed out that no university in India has so far been able to go over to either performance budget or programme budgeting of any kind. This situation continues even though in some of the States in India the various Departments of the Government including Education Department have already moved over to performance budgeting. Therefore, one of the efforts in future to which we have to address ourselves is the task of ensuring that the budgets are prepared more meaningfully so as to enable interpretation of the actual financial situation of universities and evaluation of the academic programme alongside with the expenditure incurred on them.

Accounting is the pre-requisite in order to bring about a change in budgeting. This also received considerable amount of attention in the lecture-discussions.

While the process of improvement in financial administration remained as an objective which was sought after by the training programme, the improvement in the existing financial procedure also was kept in mind. For that purpose delegation and control in Indian universities were discussed in detail and the role of finance committee also received considerable amount of attention. Very often there is a under estimation of revenue and over estimation of expenditure in our universities. In order to avoid these situations there was discussion on revenue planning, monitoring and preparation and maintenance of accounts in the universities.

One of the important developments happening in the field of university administration is the application of managerial techniques. In keeping with this trend the possibility of applying a kind of planning, programming and budgeting system to universities was explored and there were lecture-discussions on the application of O & M Method through university administration.

The finance officers were divided into groups and they went into different aspects of the functioning of the finance officers in the universities and made recommendations to UGC, State Governments, and to Universities in order to improve the financial functioning. The following are among the more important recommendations arrived at by the finance officers.

1. Finance officer should always be associated with the planning activities going on in the universities and the planning offices should provide the necessary information to finance officers particularly for the preparation of budgets.
2. As regards the status of the finance officer it was agreed that he should not be subordinate to the Registrar and should work independently and directly under the control of the Vice-Chancellor.
3. The finance officer's functions extend to budgeting, accounting and collection of revenues and disbursement. He should, therefore, have a well equipped organisation under him to deal with such subjects. For example, (i) budget and annual accounts; (ii) payment of salary and allowances; (iii) cash unit, (iv) endowment and investment, etc. (v) provident fund; and (vi) other disbursements. In order that such functions may be properly discharged, it is desirable that a work study should be made so as to determine some norms for the staffing pattern for the common functions performed in the universities.
4. There should not be any separate cadre of office staff for finance branch but a system of inservice training followed by accounts examination would be desirable and the finance branch staffing from assistant onwards should be only from the staff who had qualified in that examination. There should be two separately standards of examinations for assistants and officers. Incentive should be provided to those who pass the prescribed examinations.
5. The staff working in the finance branch should be under the administrative control of the finance officer. Transfers from and to finance branch should be in consultation with the finance officer.
6. There should be proper procedural manual for laying down working procedures of the finance branch.
7. The finance officer should be competent to delegate powers prescribed for him to other officers with the approval of the Vice-Chancellor and subject to the provisions in the University Act and Statutes.
8. An attempt should be made to arrange periodical seminars at different levels in order that the common points may be discussed and a forum for exchange of ideas may be available to enable effective and efficient improvement. Such seminars may be at the state level. Similarly. there should be a system whereby the officers of the same university should meet periodically to discuss matters regarding functions of the department viz. finance department.
9. A research base study in order to apply modern techniques should be considered to enable bringing out innovative procedures.
10. The finance officer should not be relieved of the responsibility of being the custodian of the endowments in the form of immovable property of the university.
11. The finance officer should not execute contracts on behalf of the university but pre-scrutiny of such contracts by him may by made mandatory.
12. The finance officer should report directly to the Vice-Chancellor and should be independent of the Registrar.
13. The finance officer should invariably be invited to participate in the deliberations of the Syndicate/Executive Council and all agenda items having financial implications should be accompanied by his written advice, where finance officer feels it necessary before they come up for consideration of the Syndicate/Executive Council. The relevant part of minutes before issue should also be finalised in consultation with the finance officer.
14. The Central and State Governments may provide in the relevant Acts those instances in which the finance officer is over-ruled by either the Vice-Chancellor or the Syndicate/Executive Council are brought to the notice of the Chancellor.

Personal

1. **Prof. Amlan Datta has been appointed Vice-Chancellor of Visva Bharati.**
2. **Dr. A.P. Mehrotra has taken over as Vice-Chancellor of Avadh University.**
3. **Prof. D.D. Kosambi has been posthumously awarded the Hari Om Trust Prize of Rs. 10,000/- by the University Grants Commission for his distinguished work in the field of interaction between science and society.**

CLASSIFIED ADVERTISEMENTS

INDIAN INSTITUTE OF TECHNOLOGY
KANPUR
Advertisement No. 18/80

Applications are invited for the following posts in the Institute in the pay scales noted against each:

Professor: Rs 1500-60-1800-100-2000-125/2-2500.

Assistant Professor: Rs 1200-50-1300-60-1900.

Lecturer: Rs 700-40-1100-50-1600.

The Department of Chemistry and Civil Engineering are seeking individuals to fill up the teaching positions with ability and aptitude for teaching in undergraduates/post-graduate programmes, research and development in all branches of Chemistry, including inter-disciplinary areas associated with Chemistry, and research and development in any of the areas of specializations in Civil Engineering listed below. The number of positions available in each department are also indicated below:

Department of Chemistry

Number of positions: Five (likely to be eight). Professor/Assistant Professor/lecturer.

Department of Civil Engineering

Number of positions: Nine—Assistant Professor/Lecturer.

(a) **Engineering Geology**: Areas of specialisation: Application of Geosciences in Civil Engineering with experience in areas such as Computer applications in earth sciences; Modern techniques in petrographic and mineral analysis; Engineering geophysics; Hydrogeology.
Position: Lecturer

(b) **Environmental Engineering**
Assistant Professor: Area of specialisation: Experimental and field studies in air pollution, water quality modelling.
Lecturer: Area of specialisation: Environmental System.

(c) **Geotechnical Engineering**: Areas of specialisation: Experimental and (or) analytical studies in geotechnical engineering.
Position: Lecturer

(d) **Hydraulics and Water Resources Engineering**: Areas of specialisation: Surface water hydrology and water resources engineering and specialisation in Stochastic Hydrology, water resources systems analysis, Numerical methods.
Position: Lecturer

(e) **Structural Engineering**: Areas of specialisation: Probabilistic analysis and structural design.
Position: Lecturer

(f) **Surveying and Photogrammetry**: Areas of specialisation: Surveying and photogrammetry; Experience in the area of remote sensing is preferred.
Position: Lecturer

(g) **Transportation Systems Engineering**: Areas of specialisation: Urban and regional systems planning; Transportation economics.
Position: Lecturer
Candidate having special aptitude and experience in the areas of Civil Engineering Materials and Construction Planning and Management will be preferred.

QUALIFICATIONS AND EXPERIENCE FOR VARIOUS POSITIONS

PROFESSOR: Doctorate degree with good academic record and atleast eight years of professional experience of good quality outside the work for the degrees.

OR

M. Tech. with good academic record and at least fifteen years of industrial experience with brilliant record outside the work for the degree.

The candidates must have demonstrated ability in teaching and independence in research evidenced by significant contributions by way of publications of good quality in journals of repute or developmental projects works of merit in any one of the aforesaid areas of specialisations.

ASSISTANT PROFESSOR: Doctorate degree with good academic record and at least three years of professional experience outside the work for the degree.

OR

M.Tech. with good academic record and at least seven years of industrial experience outside the work for the degree.

The candidates must have demonstrated ability in teaching and independent research work as envisaged by adequate number of research publications of good quality in journals of repute or developmental work of merit in any one of the aforesaid areas of specialisations.

LECTURER: Doctorate degree with good academic record and adequate research experience resulting in research papers of good quality.

OR

M.Tech. with good academic record and atleast three years of teaching research/industrial experience with good record outside the work done for degrees.

The candidates must have ability for good teaching and independent research evidenced by adequate publications or developmental work in any one of the aforesaid areas of specialisations.

FOR ALL THESE POSITIONS BASIC DEGREE IN RESPECTIVE BRANCH IS REQUIRED EXCEPT IN THE AREA OF ENGINEERING GEOLOGY.

The Institute has well equipped laboratories and also Biosystems Laboratory, Laser Laboratory, besides central facilities. There is well established Computer Centre having DEC 10, IBM 1800, PDP-1 Systems with interactive graphic terminals and TDC-316, and group of experienced programmers. The Institute has a well stocked library with more than 2,17,000 volumes and 1800 periodicals. The Central facilities included 2 Me Van de Graaff accelerator, 4096 multi-channel analyser and other radiation detection equipment liquid nitrogen and spectrometers, glass blowing shop, Crystal growth facility, central instrumentation laboratory, precision machine shop, electron micro-scope besides a large workshop for fabrication of specialised research apparatus.

There is an Advanced Centre for Electronic Systems in the Institute attached to the Department of Electrical Engineering. The Centre carries out unclassified research and development work in the areas such as Communication, Radar, Signal and Image processing and instrumentation Systems sponsored by Government agencies and industry. Besides, an Advanced Centre for Materials Science has been established recently at the Institute by the Government of India to undertake research in the frontier of development of materials of national importance.

In the category of Lecturer one post in each department will be reserved for SC/ST candidate. In the event of non-availability of suitable SC/ST candidate, the reserved posts would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm × 10 cm size. Application should be accompanied by a postal order for Rs 7.50 (Rs 1.87 for SC/ST candidates).

Applicants who are employed in a Government/Semi Government organisation of Institutions should send their applications through proper channel, else they will be required to produce a 'No Objection' Certificate from their employers at the time of interview.

Applicants from abroad may apply on plain paper enclosing a complete biodata and names of three referees from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016, U.P. (India) on or before **June 30, 1980**.

MADURAI KAMARAJ UNIVERSITY

PALKALAINAGAR MADURAI-625021

Notification No. 1/V/Advt/80

Applications in the prescribed form are invited for the following posts in the University:

School of Tamil Studies & Indian Languages

1. One Professor of Tamil
2. One Professor of Journalism
3. One Reader in Tamil

School of Biological Sciences

1. One Reader in Cell Biology
2. One Reader in Plant Genetics
3. One Lecturer in Microbiology
4. One Lecturer in Immunobiology
5. One Lecturer in Plant Physiology

School of Mathematics

1. One Professor of Mathematics (Statistics)
2. One Lecturer in Mathematics

School of Social Sciences

1. One Professor of Sociology
2. One Reader in Political Science
3. One Reader in Econometrics

Department of Geography

1. One Professor of Human Geography.
2. One Reader in Geography

Institute of Correspondence Course & Continuing Education

1. Two Lecturers in Mathematics

Scales of Pay

Professor—Rs. 1500-60-1800-100-2000-125/2500.

Reader—Rs. 1200-50-1300-60-1900.

Lecturer—Rs. 700-40-1100-50-1600.

GENERAL QUALIFICATIONS

Professor: A first or high second class Master's degree and a Ph.D. degree in the relevant subject with not less than 10 years of teaching (P.G. courses) and/or research experience including guiding research at doctoral level of which atleast 3 years must be of a Reader or a position equivalent thereto.

Reader: A first or high second class Master's degree and a Ph.D. degree in the relevant subject with not less than 5 years of teaching (P.G. courses) and/or research experience of which atleast 3 years must be of a Lecturer or a position equivalent thereto.

Lecturer: Consistently good academic record with a first or high second class Master's degree and a Ph.D. degree in the relevant subject with not less than 3 years of teaching experience at P.G. level.

PREFERENCE would be given to Scheduled Caste/Scheduled Tribe candidates who are considered fit in respect of LECTURERS.

Appointment of persons on deputation will also be considered, if the candidates are found suitable and the employer is agreeable to spare the services.

The prescribed form of application and full details regarding qualifications and experience required can be got from the undersigned on requisition accompanied by (1) a self addressed envelope with postage stamps to the value of Re. 1/- 10 p affixed thereon and (2) State Bank of India Challan for Rs. 5/- (Account No. 1) or Demand Draft for Rs. 5/- payable at Madurai drawn in favour of the **Registrar, Madurai Kamaraj University, Madurai-625021; The number of the notification should be quoted in the requisition i.e. No. 1/V/Advt/80.**

The last date for receipt of filled in applications is **10-6-1980**. Applications received after the due date will not be considered.

B. Murugan
REGISTRAR

SRI VENKATESWARA UNIVERSITY

TIRUPATI

Advertisement No. EII-2/1980 (2) dated 15-5-1980

Applications are invited in the prescribed form for the following posts in the University service on or before **23-6-1980.**

S.No. 1	Post 2	No. of posts 3
	I. TEACHING	
1.	**State Bank of India Chair** Professor in 'Rural Banking & Development of Rayalaseema'	One
2.	**A.P. State Electricity Board Chair** Professor in 'Power Systems Engineering'	One
3.	**T.T.D. Chairs**	
	(a) (i) Professor in Ancient Indian History, Culture & Archaeology	One
	(ii) Reader in Ancient Indian History, Culture & Archaeology	One
	(iii) Lecturers in Ancient Indian History, Culture & Archaeology	Two
	(b) (i) Reader in Epigraphy	One
	(ii) Lecturer in Epigraphy	One
	(c) (i) Professor of 'Comparative Hindu Religion' 'inclusive of 'Sri Venkateswara Studies'	One
	(d) **Annamacharya Chair** Reader	One
	S.V.U. COLLEGE OF ARTS & SCIENCES : TIRUPATI.	
4.	Lecturer in Physics	One
5.	Lecturer in Zoology	One
	S.V.U. COLLEGE OF ENGINEERING TIRUPATI	
6.	Lecturer in Chemistry	One
	Scale of pay 1. **Professor**: Rs. 1500-60-1800-100-2000-125/2-2500. 2. **Reader** : Rs. 1200-50-1300-60-1900 3. **Lecturer**: Rs. 700-40-1100-50-1600	
	II. NON-TEACHING	
7.	(a) Co-Ordinator, (b) Project Officer and (c) Typist/Accountant Clerk in National Adult Education Programme in Adult Education Department in the scale of Rs. 1100-50-1600; Rs. 700-70-900-EB-40-1100-50-1300; and Rs. 310-14-380-15-560, respectively.	One each (For three years only)
8.	Micro Analyst Rs. 530-30-770-35-1050	One
9.	Research Assistant (MSS Library Section) Rs. 480-25-780-30-900	(Reserved for BC-A)
10.	Garden Supervisor Rs. 410-18-590-20-750	One
11.	Library Assistant Rs. 320-14-460-15-580	One (Reserved for S.T.)
12.	U.D. Stenographers Rs. 310-14-380-15-560 Plus Stenographers allowances	Two (Reserved for S.C.)
13.	Secondary Grade Assistant Rs. 250-10-430	One (Reserved for S.T.)
14.	Foreman Rs. 310-14-380-15-560	Two (One Reserved for S.C.)
15.	Computor Rs. 240-10-420.	One (Temp.)

All the above posts carry D.A. etc., at the University rates. There will be reservation for S.C./S.T./B.C. candidates for 'Lecturers' posts according to U.G.C./State Government guidelines.

The prescribed application form and other particulars can be had from the Registrar, Sri Venkateswara University, Tirupati-517502, Andhra Pradesh, on payment of Rs. 5/- in the case of Teaching posts and Rs. 2/- in the case of Non-Teaching posts, either by Andhra Bank Challan or State Bank of India Chalan or Crossed *Indian Postal Orders of the said value drawn in favour of the Registrar, Sri Venkateswara University, Triupati-517502, AndhraPradesh (*Payable at the S.V.U. Campus Postal Office only).

The University reserves to itself the right to increase or decrease the number of posts, to fill or not to fill any or all of the above posts and to relax the qualifications when candidates with prescribed qualifications are not available or not found suitable, to appoint candidates to posts lower than the ones for which they have applied and to consider and appoint persons who may not have applied.

Candidates called for interview have to attend at their own expenses.

REGISTRAR

RAVISHANKAR UNIVERSITY RAIPUR

Employment Notification No. 2/80

No. 2526/Admn./5/1980, dated the 23rd May, 1980.

Applications are invited for appointment to the following posts in the University Teaching Departments :

S.No.	Name of Posts	No. of Posts
I	Professor Psychology	One
II	Lecturer Linguistics	One

2. The post of Lecturer in Linguistics is temporary but likely to continue.

3. **Scales of Pay**

   Professor Rs 1500-60-1800-100-2000-125-2500/-

   Lecturer Rs 700-40-1100-50-1600/-

4. **Qualifications for Professor**

   (a) A Doctor's degree or published work of an equivalent high standard; and

   (b) (i) A second class Master's degree in a relevant subject with atleast 50% marks (Grade B in the seven point scale) or an equivalent degree of a foreign university; and (while taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded), (ii) atleast 50% marks at the Bachelor's degree exam., on the basis of which division is awarded at the degree level by the University and (iii) Atleast 50% marks at the Higher Secondary/Intermediate/Pre-University examination, as the case may be ;

   (c) Experience : (i) Atleast 10 years experience of teaching the subject to the post-graduate classes, (ii) evidence of candidate having been awarded a doctor's degree under his supervision.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident from his thesis or from his published research work is of a very high standard, it may relax any of the qualifications prescribed in (b) above;

5. **Qualifications for Lecturer**

   (a) and (b) same as for Professors

Having regard to the need for developing inter-disciplinary programmes the degree in (a) and (b) (i) may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard it may relax any of the qualifications prescribed in (b)

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person from the following categories may be appointed :

Category : A

(i) A 2nd class Master's degree in a relevant subject with atleast 50% marks (b in the seven point scale) (while taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded); and (ii) 2 years experience of research work or practical experience in research laboratory/research organisation ; (iii) atleast 50% marks at the Bachelor's degree exam, on the basis of which division is awarded at the degree level by the University and (iv) atleast 50% marks at the higher Secondary/Intermediate/Pre-University Examination as the case may be.

OR

Category : B

(i) A Master's degree with first class or grade 'A' in the relevant subject; (b) atleast 50% marks at the Bachelor's degree examination on the basis of which division is awarded by the University: and (iii) atleast 50% marks at the Higher Secondary/Intermediate/Pre-University Examination as the case may be.

Provided further that if a candidate from the above two categories is selected, he will have to obtain a Doctor's degree M. Phil. degree or have to his credit published research work of equivalent standard within 5 years of his appointment, failing which he will not earn future increments until he fulfils these requirements.

6. The requirement regarding minimum percentage of marks shall be relaxed upto 5% in the case of Scheduled Castes/Scheduled Tribes candidates. Fifteen per cent of the posts in each department are reserved for the candidates belonging to Scheduled Castes and 18% for the Scheduled Tribes candidates.

7. **General** : (i) Contributory Provident Fund, dearness and other allowances and benefits are available as per University rules. Higher initial salary in the scale may be considered in case of exceptionally qualified and deserving candidates, (ii) candidates in employment must submit their applications through proper channel. Applicants called for interview will have to bear their own expenses. (iii) The University reserve the right not to fill any post without assigning any reason thereof, (iv) Applications/alongwith attested copies of Certificates should be submitted in seven copies on prescribed form. (v) Request for the prescribed application forms should be made to the Registrar by sending Rs 5/- in cash or by crossed bank draft, together with a self-addressed envelope of 23×11 Cm. size bearing postal stamps worth Rs 1.75 p. for recorded delivery. (vi) Application must reach the Registrar's Office on or before **23rd June, 1980.**

H.N. Shukla
REGISTRAR

UNIVERSITY OF RAJASTHAN JAIPUR

Corrigendum

The following Corrigendum of advertisement No 9/80 issued by this University is hereby notified :

1. The post of Professor of Chemistry which was advertised for Physical branch is a General post of Professor of Chemistry and does not belong to any branch.
2. With regards to the posts meant for the Institute of Correspondence Studies & Continuing Education, "experience of working in the Correspondence Courses" would be considered as desirable qualifications.
3. The last date for the receipt of the application with reference to the above advertisement, is extended to **4th June, 1980.**

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

Addendum to Advertisement No. 16/80 for Faculty Positions in the Department of Chemical Engineering / Electrical Engineering.

The qualifications and experience for the post of LECTURER may be read as follows:

> "Doctorate degree with a good academic record and adequate research development experience resulting in research papers of good quality.
>
> OR
>
> M.Tech. with good academic record and atleast three years of teaching research/Industrial experience with good record outside the work done for degrees.
>
> The candidates must have ability for good teaching and independent research evidenced by adequate publications or developmental work in any one of the aforesaid areas of specialisations."

ANDHRA UNIVERSITY

WALTAIR

Advertisement No. 2/80.

Applications in the prescribed form are invited for the following posts so as to reach the Registrar, Andhra University, Waltair on or before **16-6-1980.** Each application shall be accompanied by Bank receipt for Rs. 10/- (Rupees ten only) remitting the amount in the State Bank of India to the credit of Andhra University General Account (Ordinary) towards the Registration fee for the application. Candidates residing outside Andhra Pradesh may however remit the registration fee by M.O. in favour of Registrar, Andhra University and send the M.O. receipt along with the application.

Department	**Professor**	**Reader**	**Lecturer**
I. TEACHING POSTS			
Philosophy	..	1	2
History & Archaeology	..	1	..
Education	..	1	..
English	..	..	3
Hindi	..	..	1
Telugu	..	..	1
Engg. Mathematics (Engg. College)	..	1*	..
Pharmacy	1	..	..
Civil Engineering	..	..	1
II. NON-TEACHING POSTS			
Industrial Relations & Labour Welfare	(i) Field Work —1 Post Supervisor (ii) Community —1 Post Organiser		

*Temporary

Scale of Pay

Professor—Rs. 1500-60-1800-100-2000-125/2-2500.

Reader—Rs. 1200-50-1300-60-1900.

Lecturer—Rs. 700-40-1100-50-1600.

Field Work Supervisor & Community Organizer —Rs. 750-30-1020-35-1300. (D.A. Merged Half).

Note

The rule of reservation for S.C./S.T./B.C. candidates is applicable for the posts of Lecturers and Field Work Supervisors and Community Organizers.

The details of qualifications prescribed in respect of the above posts including the particulars and precise branch of specialisation which is needed and also the preferential qualifications considered desirable will be furnished along with the application form.

Requisition for the application forms may be made to Sri P. Hanumantha Rao, Joint Registrar, Andhra University, Waltair accompanied by a self addressed and stamped envelope and a State Bank of India Challan for one rupee. Candidates residing outside Andhra Pradesh may, however, obtain the application form by remitting one rupee by M.O. in favour of the Registrar, Andhra University towards the cost of application form and sending the M.O. receipt along with the requisition for application form. Postal Orders will not be accepted. The University reserves the right to fill or not to fill all or any of the posts. The cover containing the applications should be superscribed as "APPLICATION FOR APPOINTMENT TO THE POST OF ...." Applications received after 5-00 P.M. on the due date **will not be entertained.**

P. Hanumantha Rao
JOINT REGISTRAR

THE UNIVERSITY OF KASHMIR

SRINAGAR

Advertisement Notice

Applications on the prescribed application form to reach the undersigned by 7th of June, 1980 are invited for the following posts carrying the pay scales indicated against them :

1. Director, Centre of Research for Development—Rs. 1500-2500.
2. Reader in Commerce, Museology (Centre of Central Asian Studies)—Rs. 1200-1900.
3. Lecturer in Botany, Geography and History (temp.)— Rs. 700-1600.
4. Coordinator (NAEP)—Rs. 1100-1600.

The prescribed application forms can be had from the University office on cash payment of Rs. 6/- or by sending a crossed Postal Order drawn in favour of the Registrar of this University cashable at Srinagar Post-Office along-with a self addressed envelope (5" x 11") with the necessary postage.

Candidates are advised in their own interest to send their detailed curriculum vitae in advance.

Details in respect of the qualifications prescribed for the posts can be obtained from this office.

Peerzada Ghulam Hassan
Dy. REGISTRAR (Admn.)

JAMIA MILLIA ISLAMIA

Jamia Nagar, New Delhi-110025.

CORRIGENDUM

This is for information of all concerned that under Advt. No. 1/80-81 published in these columns in **Vol. XVIII No. 10, May '80.**

(1) Five posts of Professional Assistants and one post of Teacher in Hindi and Hindu Ethics in the Faculty of Humanities and Scs. may be treated withdrawn.

(2) The grade for the post of Secretary to Shaikhul Jamia is Rs. 700-1300 and not Rs. 700-1600 as advertised.

(3) The post of 'Lecturer in Education (Mathematics)' may be treated as 'Lecturer in Education'.

S. H. Naqvi
OSD/OFFG. REGISTRAR

MADURAI KAMARAJ UNIVERSITY

Palkalainagar Madurai-625021.
Notification No. 2/V/Advt./80.

Applications in the prescribed form are invited for the following posts in the University:

Department of Library and Information Science

One Lecturer in Library and Information Science.

Department of Management Studies

One Professor of Management Studies.
One Reader of Management Studies.
One Lecturer in Management Studies.

Department of Energy Sciences

One Professor in Energy Sciences.
Two Readers in Energy Sciences.

For Tirunelveli PG Extension Centres

One Reader in Sociology.
One Lecturer in Sociology.
One Reader in Inorganic Chemistry/Physical Chemistry.
One Lecturer in Organic Chemistry/Physical Chemistry.

ESSENTIAL GENERAL QUALIFICATIONS

Professor: A I or high II Class Master's Degree and a Ph.D. Degree in the relevant subject with not less than 10 years of teaching (postgraduate courses) and/or research experience including guiding research at doctoral level of which atleast 3 years must be of a Reader or a position equivalent thereto:

Reader: A I or high II Class Master's Degree and a Ph.D. Degree in the relevant subject with not less than 5 years of teaching (postgraduate courses) and/or research experience of which atleatst 3 years must be of a Lecturer or a position equivalent thereto.

Lecturer: Consistently good academic record with a first or high second Class Master's Degree and a Ph.D. Degree in the relevant subject with

(Contd. on page 309)

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Achamamba, B.Cognitive efficiency, personality and perceptions of time. Sri Venkateswara University.

2. George, V.C. Cognitive functions and adjustment in epileptics in response to treatment : A follow up study. Bangalore University.

3. Koshy, Raymol R. Obsessional states: A multiple classificatory approach. Bangalore University.

4. Parmar, Param. Human aggression: Its assessment. Bangalore University.

5. Vinutha, N.A. Problems of social identity and behavioural dysfunctions. Bangalore University.

6. Vora, Niranjan Bhaichand. An experimental study of some of the personality and situational determinants of cognitive consistency—inconsistency with special reference to tolerance and reduction of inconsistency. M.S. University of Baroda.

Sociology

1. Gogoi, Chandra Kanta. Occupational differentiation perception of status and social interaction in an oil town. Dibrugarh University.

2. Shrivastava, Arun Kumar. Modernization and democratic family: An empirical study conducted among the urban upper middle class Hindu family of Jabalpur. University of Jabalpur.

Political Science

1. Agrawal, Pratap Narayan. Bastar Zile mein jaghanya apradhon ke nayayik prashasan ka vigat dashabdi mein kalkramik anusheelan, 1968 se 1978. (Hindi). Ravishankar University.

2. Dwivedi, Somnath. Pradhanmantri Shrimati Indira Gandhi ke 20 sutriya karyakram ke prati rajnitik chetna evam drishtikon (Hindi). Vikram University.

3. Manikyamba, Palepu. Legislative Committees in Andhra Pradesh. Andhra University.

Economics

1. Agarwal, K.B. Industrial estates in Madhya Pradesh. University of Jabalpur.

2. Govind Nalini. Variations in wheat and rice responses to new technology in agriculture : A case study of selected regions in India. Jawaharlal Nehru University.

3. Vijay Kumar. Relationship between acreage sown and climatic factors in Lucknow District, 1891-1940. University of Delhi.

Law

1. Ayalasomayajula, Lakshminadh. Stare decisis in the Supreme Court : A critique. Nagpur University.

2. Jain, Subhash Chander. Expropriation of alien property and the problem of compensation. Jawaharlal Nehru University.

Public Administration

1. Pendyala, Seetha. Public corporation in Assam : An analytical study since 1960. Gauhati University.

Education

1. Dholakia, Jagruti Vipul. Effects of observers and feedback upon changing the class-room performance of pupil teachers. M.S. University of Baroda.

2. Mulay, Vinayak Nagesh. Construction and standardization of verbal test of intelligence in Marathi for the age group 12 to 18+. Marathwada University.

3. Seshadri, Malathi. An experiment in the use of programmed instruction in secondary school. M.S. University of Baroda.

Commerce

1. Deshpande, Manohar Uttamrao. Small scale industrial entrepreneurship in a developing region. Marathwada University.

HUMANITIES

Linguistics

1. Majumdar, Pares Chandra. A historical phonology of Oriya. University of Calcutta.

2. Pandey, Keshi Nath. A grammar of Dandami Maria. Ravishankar University.

3. Singh, Udaya Narayana. Some aspects of Maithili Syntax : A transformational—generative approach. University of Delhi.

4. Verma, Mehtaru Lal. Savaria boli ka swanprakriyatmak tatha subsuginimik adhyayan evam us per Hindi adi bhashaon ka prabhav. Ravishankar University.

Literature

English

1. Amir Ali, Shamim. A stylistic analysis of Indo-Anglian fiction. Ravishankar University.

2. Arya, R.C. Modality in English and Hindi. Central Institute of English and Foreign Languages, Hyderabad.

3. Major, Mehru M. Phonetics and phonology of Parsee. Gujarati and English. Nagpur University.

Sanskrit

1. Dey, Sitanath. Shukla Yajurveda: A study. Dibrugarh University.

2. Joshi, Kedar Narayan. Shri Shripad Shastri Hasurkar kee rachnaon ka samalochanatmak adhyayan. Vikram University.

3. Mishra, Vidya Prasad. Kavyapankriti Sarvanukramani evam Shadguru-shishya krit Vedarta Dipika ka anuvad tatha parisheelan. University of Gorakhpur.

4. Ojha, Shanker Dutt. Raghuvanash : Ek upjeevya kavya. University of Gorakhpur.

5. Sharma, Soma. Vyayogas in Sanskrit. University of Delhi.

6. Upadhyaya, Shrinivas. Ramayan aur Mahabharat mein Ayurved. Ravishankar University.

Hindi

1. Devaliya, Vishwa Bhavan. Hindi ke rangmanchiya natakon ka prastutikaran. University of Jabalpur.

2. Dobhal, Kusum. Hindi ke bal kavya mein prateek yojana evam kalpana tatwa. Garhwal University.

3. Gupta, Ram Niwas. Paum charit kee vastugat evam shilpgat prevrittiyan aur unka parvarti Hindi charitkavyon per prabhav. Maharshi Dayanand University.

4. Malviya, Ramchandra. Kedarnath Agarwal : Vyakti aur rachnakar. Vikram University.

5. Mishra, Praduman Kumar. Pragatisheel samiksha: Udbhaw vikas, pariniti. Vikram University.

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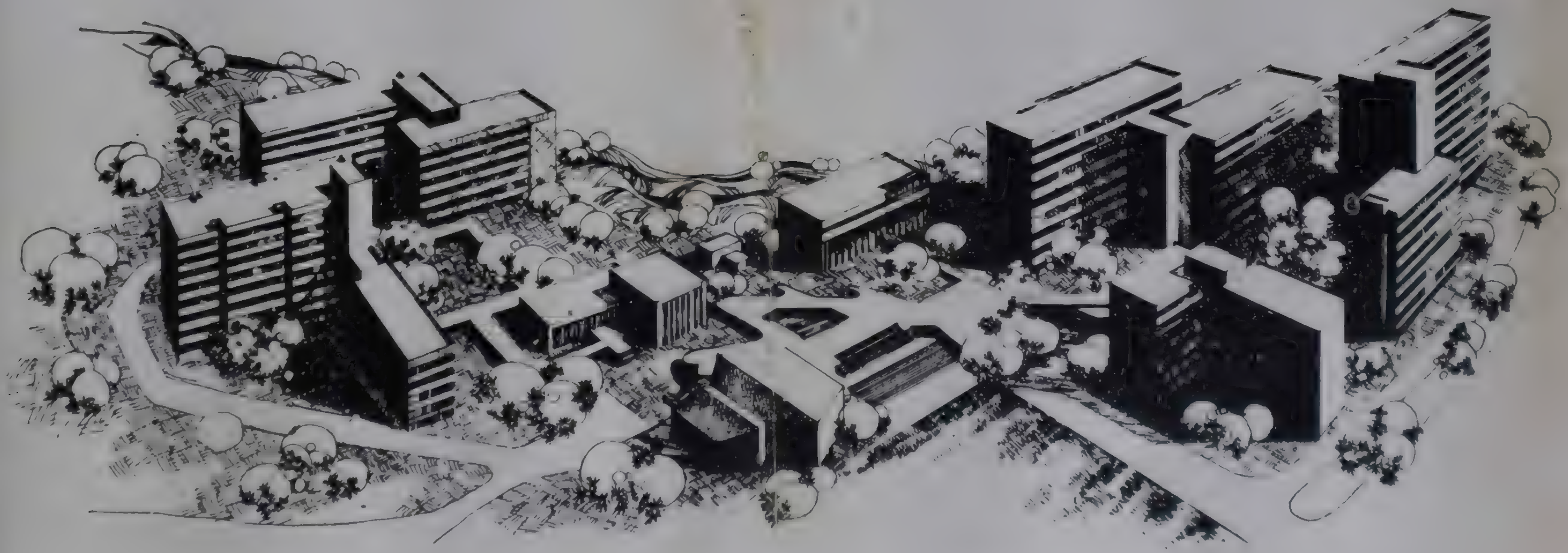

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Role of Science & Technical Education in National Development

B. Ramachandra Rao*

In a rapidly changing environment, the concept of education has undergone a dramatic change. Logically it has acquired a new dimension in order to meet the emerging and foreseeable needs of society. Its goals, objectives and functions are no longer viewed merely in terms of conservation, transmission and dissemination of knowledge. What we need today are the preparation of functional skills and inculcation of scientific temper which have acquired a new significance in the educational systems of both the developed and developing societies.

No wonder, education in our times has played a crucial role in achieving a spectacular material transformation in the human and social environment. There is enough evidence, backed by empirical researches and general studies, to show that education has been a crucial factor in rapidly increasing the GNP of the developed societies during the last few centuries. This rapid increase in the material advancement of these societies was primarily achieved by the application of science and technical education to agriculture and industry, say, for example, Germany during the last three decades of the nineteenth century and the USSR during the thirtees and forties of the twentieth century registered a tremendous growth in their economy through the process of extending the frontiers of scientific knowledge as well as improving and adapting the existing knowledge to meet the demands of their national goals.

It is against this background that we have to analyse the crucial role of education in eradicating our poverty, illiteracy, ignorance and improving the impoverished rural environment and the quality of life of our masses who have suffered socio-economic exploitation and humiliation for a number of centuries. Indeed, this is a challenging task which would call for the exploitation of our material and manpower resources to the fullest extent. It is the human being who is the cause and consequence of underdevelopment, and the subject and the object of development. It is, therefore, necessary to identify an appropriate approach to education in order to initiate the right kind of developmental activities utilising our human resources.

The system of education which the country inherited at the time of Independence was found to be incapable of fulfilling the task of developing human resources for the modernisation of our economy. True, attempts have been made from time to time by the policy-makers to reorient the educational system to meet the needs and the requirements of the growing economy. Most of the recommendations made by the various educational committees

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Vice-Chairman, UGC, New Delhi.

educational systems, have either been implemented or still in the process of being implemented. As a result of new experiments and innovations, we have achieved some degree of success but much remains to be done. The time has, perhaps, come to review the progress of the new educational schemes in order to identify their success or failure. Perhaps, it is this thing that calls for a new approach to the problem.

Immediately after the attainment of Independence, the Government set up the University Education Commission under the Chairmanship of Dr S. Radhakrishnan to report on Indian Universities and suggest improvements that may be desirable to suit present and future requirements of the country. *The University Education Report 1948-49* recommended that "*for a fuller realisation of the democratic principles of justice and freedom for all, we need growth in science and technology.*" Dr D.S. Kothari in the Education Commission Report (1964-66), stated that "*in a science-based world, education and research are crucial to the entire developmental process of a country, its welfare, progress and security.*"

Pandit Nehru, the first Prime Minister of India, was firmly convinced about the remarkable power of Science and Technology towards the creation of a new social order. The resolution on National Science Policy was passed under his leadership which gave a new direction to the expansion of science and technology in our country. This resolution states in categorical terms that it is only through the application of science that the Nation could fight against the regressive heritage of poverty, malnutrition, an underdeveloped infrastructure of communication, agriculture, industry, education and energy. Who indeed could afford to ignore science today? At every time, we have to seek its aid. *The future belongs to science and to those who befriend science.*

Perhaps, it was in pursuance of the recommendations of the *University Education Commission Report* (1948-49) and the *Education Commission Report* (1964-66) that science and technical education witnessed an appreciable growth in the country at all levels and in all sectors. At the time of Independence, the country had 17 universities and 626 colleges. The total enrolment was 2,37,546 students in 1947-48. Now we have about 25,15,608 students in 108 universities, 10 institutions deemed to be universities, and 4 610 colleges. India has a large number of scientific and technical agencies which have established a chain of national laboratories for carrying out a wide range of research in diversified areas of development. The enrolment in engineering, medicine, agriculture and veterinary sciences has also registered an appreciable growth. The five institutes of technologies have been established on the pattern of similar institutes of technology abroad and also in collaboration with four countries in the world: Britain, Germany, USSR and USA. In 1977-78, the number of colleges of modern medicine stood

ing importance of agricultural technology in green revolution, graduate and postgraduate courses and research programmes in agricultural sciences have expanded enormously. The agricultural universities have also undertaken the responsibility for developing comprehensive programmes, new farming methods, proper rotation of crops, better tools and use of chemical fertilisers. In 1977-78, we had 21 agricultural universities offering undergraduate, postgraduate courses in different areas of agricultural sciences.

Despite physical and financial constraints on our economy, the Government made considerable investment in Science and Technological education. A good amount of money was set apart for the development of research institutions. The annual expenditure on education is 2,500 crores of rupees which is only next to that of defence budget.

What has been said in the preceding paragraphs, however, would not reveal the crisis which we are facing in the development of higher education during the last two decades. The frightening feature of the present day educational scene is the explosive expansion of enrolment of students in our colleges and universities, a trend which has magnified the weaknesses that had crept into the system earlier without anyone taking note of them. Part of this uncontrolled expansion was based on the misconception that the economic growth of a developing country like ours can be achieved by producing more highly educated graduates and post-graduates, particularly in the fields of science, engineering, agriculture and medicine and that too on the Western models.

Further, it was an article of faith with our planners that investment in higher education in select areas will be directly translated into economic growth, a belief which has been shown to be totally fallacious. In fact even in the case of developed countries, it is known that once the country reaches the threshold value for scientific and technical personnel, the effect of any further increase in manpower on economic growth is marginal. It is only recently that our planners and policy-makers realised that this expansion based on the earlier assumption of the planners has led to a lop-sided development resulting in sectoral, social and regional imbalances which do not augur well for the immediate future of our country.

Another major implication of this expansion, which has recently become a source of serious concern, is that the benefits accruing from higher education were taken away by the top 30 per cent income-group while 70 per cent of our people have been deprived of their rightful share in them. Contrary to the expectations of social justice, the gap between the rich and the poor has further widened. It is no wonder that the educational orthodoxy, from the fifties onwards, which relied on the assumption that educational expansion will bring about an integrated development and simultaneously bridge the gap between the rich and the poor, has been disappointing.

While the educational system expanded in an uncontrolled and undesirable manner, educational planners, demographers and social scientists continued to be fascinated by the foreign models without being the least aware of the deep malady that had already crept into our educational system. Further, while they were pre-occupied with the endless refinements of statistical series concerning enrolment projections, they failed to correlate the system with the overall national policies and programmes. This failure is quiite apparent when we look at the documents of the Planning Commission. The First, Second and Third Five Year Plan documents had each a chapter on education, but sadly nothing has been said in them on the crucial relationship between education and manpower.

Before examining the implications of manpower planning, let me cite a few examples of how our projections of enrolment in higher education have gone wrong. It is interesting to note that the Education Commission recommended that the expansion of facilities in higher education should be planned broadly on the basis of general trends regarding manpower needs and employment opportunities. The Commission emphasised the need for a drastic reduction in the enrolment both at the undergraduate and postgraduate levels to match the output from educational institutions and the requirements of our society. The Commission further added that at this level of enrolment an economy like ours could neither provide the funds to expand higher education at this rate, nor create the capacity to find suitable employment for the millions of graduates who come out of the educational institutions. It recommended that the enrolment targets at undergraduate level be reduced from 9 per cent to 5.3 per cent for general science courses, and from 10.5 per cent to 7.9 per cent in professional courses. This thinking was based on the assumption that the national economy would register a definite growth rate of 6.6 per cent from 1961-70 and 7 per cent in 1971-86. The actual growth rate, however, turned out to be 4.5 per cent per annum from 1960-69! It is obvious that the stock of educated manpower has tended to increase at a rate faster than the growth of national income which posed problems of the absorption of scientific manpower.

It is unfortunate to note that the intake of students in engineering, agriculture and medical sciences increased substantially resulting in massive unemployment and wastage of public funds. The consequential dissatisfaction among highly skilled personnel led to brain-drain and wastage of manpower and material resources of the country. It is true that the tools and the techniques of manpower forecasting are still primitive and there may be many variations and errors in the process of forecasting. Yet, developing countries like India cannot afford to ignore manpower forecasts especially in the areas of science and technology which involve tremendous financial inputs which come from the national budget.

One suggestion, to offset this haphazard and unplanned proliferation, is to improve the quality of science and technical education. The classes are overcrowded and laboratory facilities are inadequate to cope up with the large numbers. The contact between the teacher and the student has become marginal. All these factors led to an impairment of the quality of technical education during the last two decades, particularly in the institutions under the control of the State Governments. Massive effort, therefore, is necessary to improve the quality of education by improving our impoverished facilities, modernising the laboratories, and adapting new techniques of teaching in the class-rooms. It was during the early sixties that the Indian Institutes of Technology were established and massive funding was provided to train highly competent scientific and technical manpower to meet the growing demands of industry, government laboratories and universities. Barring these prestigious institutes of technologies and a few Regional Engineering Colleges and university departments, the rest of the private and government engineering colleges are in a deplorable state. It is time that substantial resources are made available to rectify this gross imbalance in the funding of major institutes like the I.I.Ts and the rest of the Engineering Colleges. It is heartening to note that the Planning Commission on the basis of the recommendations of NCST has made an additional allocation of 25 crores of Rupees to the UGC for qualitative improvement in science education.

The decline in quality is closely linked with the curricula which were outmoded and unwieldy. It is time that our scientists and educationists tailor the courses to suit the rapidly changing requirements of our industries and research laboratories. There is an urgent need to introduce inter-disciplinary courses, such as environmental sciences, marine sciences, energy etc., which have assumed special significance in recent times. In particular, courses in Engineering and Technology should be designed to suit the needs and priorities of our national developmental activties. This is the only way to avoid unemployment and underemployment of our scientists and engineers.

Not only were the curricula outmoded but it had a built-in weakness which we have realised today. The existing curricula were tailored to suit urban areas of fully developed societies. Even in the urban sector of our economy, the undergraduates and postgraduates in Science, Engineering and Agriculture are experiencing alienation and frustration due to lack of job opportunities. They do not have the necessary self-confidence, desire and commitment to their rural brethren to work for the transformation of rural India. In particular, it is said that hardly 10 per cent of agricultural graduates seek opportunities to work in rural areas particularly on farming and the several other departments of agriculture. Even those agricultural scientists who have come from rural environment do not like to go back to rural India for professional and technical work. It appears that we have not made our rural environment an attractive place to live to attract scientists, agriculturists and technologists. Even when job opportunities are there in rural sector, our scientists and engineers are reluctant to take up work in rural areas as a challenging task for the transformation of our rural scene. They prefer to sit idle in urban environment or take up jobs in the lower income-level which do not correspond to the training which they had acquired. The only way to reverse the process of rural to urban migration is to improve the physical facilities and offer incentives to attract scientists and engineers to take up the challenging problems involving rural reconstruction.

In the earlier years after Independence, no effort was made by our planners to consciously encourage interaction between university departments catering to science and technology and industries with a view to involve them in our developmental activities. As a consequence, our courses are totally devoid of practical live situations relevant to our country. The teachers in the institutions are also divorced from the industries in their neighbourhood. Even our graduates and postgraduates are totally unaware of the techniques of production and management in industry. No wonder, it is because of our failure to build a nexus between industry and our technical and professional institutions, we are paying a heavy price. It is rather unfortunate that our industries, especially in the private sector, do not find our science and engineering graduates fit to take the jobs demanded by them. Most of the industrial complexes are unwilling to establish any colloboration with our engineering and technology departments either in training, research work or consultancy. Of late, the tax concessions given to the universities have enabled them to start building their own research and development laboratories. Is it not possible to evolve a strategy to avoid multiplication and proliferation of R and D laboratories in the country? Can't we evolve a strategy of major industries establishing their own research and development laboratories in the university campuses so that the material resources developed in these R and D units and the untapped potential of research staff of the university could be put to their mutual advantage? In this connection, a reference is made to the experiment of the Birla Institute of Technology, Pilani, which has started a comprehensive programme under the name of Practice Schools. This is a highly successful experiment in university-industry collaboration which to a large extent has yielded meaningful results not only in enhancing the practical skills and competence of their graduates but also in gaining firsthand knowledge of the pressing problems of some specialised industries. In this manner, they have not only been able to increase their job potential but also earn scholarships for their maintenance in these industries for nearly half of an academic year. Systematic contact programmes with the industries enabled the BITS to interact with a large number of industries, both in the public and private sectors to carry out the Practice School programme successfully.

Another major problem which is disturbing our planners is that we have not cared to build up medium or middle level manpower which is needed in a large measure to make a success of our developmental strategy. Unless the high level trained manpower in this country is supported fully by the medium-level trained manpower, the pace of our industrial production and technical advancement will slow down. In recent times, we have noticed the alarming trend of shortage of essential middle-level technicians such as computer programmers, instrument scientists, mechanics, plumbers, electricians etc. We have a large number of industrial training institutes and polytechnics but the products of these institutions, are neither professionally competent enough, nor adequately equipped to undertake such tasks. In order to fill this gap, the Education Commission recommended that 30 per cent of our students at the plus 2 stage should be trained in vocational courses but the attempts made so far have been half-hearted and have not yielded any meaningful results. It has generated a number of conflicts which have become a source of serious concern for the educational practitioners and the policy-makers. The major conflict is between the general versus vocational methods of education. An impression has been created in the minds of students offering vocational courses that they are inferior while the job opportunities for them would be meagre.

Apart from this, there are other reasons for the failure of vocational courses at plus 2 level. The higher secondary schools are unable to obtain adequate financial resources for providing the minimum physical facilities and the necessary infrastructure needed for running the select vocational courses. It has been possible to start only certain vocational courses such as stenography, secretarial practice etc., which do not involve large financial inputs. Urban students are not interested in joining vocational courses involving manual skills; for, these are regarded as socially inferior while promising fewer opportunities for highly paid jobs. In the case of schools in the semi-urban and rural sectors neither competent teachers nor the physical facilities are available for starting vocational courses. Besides, there is the psychological feeling that rural children are being provided an inferior type of education which will deprive them of opportunities for higher education, and also tie them down to the impoverished rural environment for ever. Thus, the vocational programmes have not made any dent on the high school system in the country in both the urban and rural sectors.

It is unfortunate that no detailed study has been made to investigate what little impact the vocational study at plus 2 level has made on the educational system. From the little information that is available, it is obvious that this experiment has failed to generate any meaningful results either from the viewpoint of improving manual skills and productive capacity of the student, or from that of the economic development of our country.

The vocational education would have been a success, if Gandhiji's ideal of introducing work experience as a compulsory part of school education is implemented. Gandhiji believed that students should learn more about nature and the world around them by taking to training in crafts and skill-oriented jobs. There is obviously a serious conflict between the general versus vocational systems of education.

erhaps, it is possible to integrate work-experience vith general education. Here is a pertinent excerpt rom Gandhiji. "*Literacy, i.e., learning of books, cquisition of intellectual knowledge and useful manu- l work in various crafts are not different though hey may seem so. Efforts to separate them and break he link that binds them together, result in the misuse of knowledge. . . The bond between the two is indis- soluble.*"

True, the University Grants Commission, which is concerned with higher education, has initiated a programme of introducing restructured vocationally-oriented courses at the undergraduate level to provide better employment opportunities for science graduates, but this too has not made any contribution in solving the problems that we are facing today. As per this scheme, a college can introduce one or more application-oriented courses in place of the present academic subjects so that there would be better opportunities for employment as well as self-employment. Several examples of such courses have been suggested. Courses such as Electronics, Instrumentation, Radio and Television, Workshop practice, Fish-farming, Agricultural chemicals, Horticulture, Dairy development, Home management, Public health, Soil science etc., can be introduced as one of the three optional subjects in the B.Sc. courses. These courses must be so chosen so that they cater to the local environment and its requirements. In this manner, the Commission hoped that the serious shortage of middle-level technicians and skilled personnel could be met. The large scale unemployment among science graduates in the country has also been the motive force in suggesting this scheme for increasing opportunities for employment in the private and public sectors. However, it is unfortunate that this scheme has not been successful for various reasons. First, the quantum of training in applied courses would put them at a serious disadvantage compared to engineering graduates. Secondly, the opportunities for postgraduate studies would be limited because of the dilution of the conventional pure science subjects with applied subjects. However, the Commission has also suggested one year post B.Sc. diploma courses which would be able to train those science graduates who are unable to get admission into Master's Courses to take up intensive vocational training in one-year-diploma courses. The training would be extensive as well as intensive in any one of the vocations where there is a serious shortage of manpower. To substantiate, since the country is facing a serious shortage of personnel in computer science, instrumentation, electronics environmental engineering etc., one year diploma courses in the subjects could be started in certain select university departments which have the facilities and the necessary expertise. It will go a long way in providing the urgently needed manpower in these areas.

There are also certain highly specialised areas at the Master's and post M.Sc. levels where there is a definite shortage of personnel such as Space Technology, Microwave Engineering, Computer Sciences, (Hardware), *Dyestuff* Chemistry and Technology, Polymer Science for which there is a good deal of demand in the country particularly in the major industries and industrial R and D laboratories. The University Grants Commission has been providing support and encouragement for starting some of the above courses in select university departments. Expressing concern at the massive unemployment at the tertiary level among science and engineering graduates, the Planning Commission has recently allocated a sum of 20 crores of rupees to the UGC to initiate several new programmes aimed at improving the job opportunities of science and engineering students.

The foregoing analysis leads to the logical conclusion that what is lacking in the country is not a dearth of ideas and constructive innovations but the will to change, the resources to invest, and the necessary authority and infrastructure to translate these ideas into tangible realities. There is an imperative need for recasting our educational priorities:

(i) by evolving new curricula and content of courses relevant to environmental needs of the country;

(ii) by augmenting physical facilities to strengthen schools, colleges and universities;

(iii) by providing ample opportunities to teachers to improve their functional ability and competence;

(iv) by identifying talented students and encouraging them to actualise their talents to the full extent; and

(v) above all, by encouraging students from backward areas and weaker sections of our society to avail of the new educational opportunities.

[*Excerpts from the convocation address delivered at the University of Poona*].

Sixth Plan : Priorities in Educational Development

J. L. Azad*

The Sixth Plan document has been published by the Planning Commission amidst wide-spread speculation that we have re-entered an era of plan holiday. The fear is, however, unfounded and betrays lack of understanding of the process of planning in India. The system of planning that we have evolved is sufficiently flexible and can withstand stresses and strains that overtake Indian economy from time to time. In the final analysis, the operational plan is the annual plan, which takes into account the various changes occurring in the economy from time to time. The five year plans at best provide the broad policy framework which has to be translated into action through the annual plans. Considered in this context, it can be argued that, unless some cataclysmic changes occur in our economic and social situation, the broad dimensions of the plan, as given in the draft Sixth Plan document will remain unaltered. There could, however, be some marginal changes in the programmes under various sectors. This presumption underlies the discussion, that follows, of educational priorities in the Sixth Plan.

It has become almost customary for the Planning Commission to initiate discussion about the priorities and programmes of education with a few commendatory statements about the potentiality of education for accelerating social and economic development. The Sixth Plan follows this procedure and describes education as a powerful instrument of socio-economic development, which must be so structured as to subserve this objective and fulfil the aspirations of the masses. It has also suggested that the policies in the field of education need to be so operationalised as to become an integral component of national development. The Plan document admits that much of the benefits from the social services infrastructure have accrued largely to the relatively affluent. Many segments of the population like scheduled castes and scheduled tribes have not shared fully in the benefits of growth and, therefore, one of the objectives of the Sixth Plan is to provide some of the basic needs of people in these income groups, like clean drinking water, elementary education, health care, adult literacy, rural roads, etc.

Approach and policies

It has been indicated that changes in the educational policies should be brought about to make the educational system relevant to our objectives of (a) removal of poverty, (b) removal of unemployment, and (c) improvement of skills. With these ends in view, elementary education and adult literacy have been included as an essential part of the Revised Minimum Needs Programme.

The policies of educational development are proposed to be formulated with a view to achieving the following objectives:

1. The educational system has to respond to socio-economic realities and promote evolution of a society without large inequalities, poverty and unemployment.
2. Greater priority to universalising elementary education for the age group 6-14 through a joint strategy of economic development and educational expansion.
3. Adult education will receive priority with emphasis on the eradication of adult illiteracy in the age group 15-35.
4. Regulation of enrolments at the secondary and higher education stages.

We shall discuss below these objectives in the context of policy statements made and the targets laid down for different sectors of education.

Elementary education

As already stated, elementary education has been given priority in the Sixth Plan and that 45% of the total outlay of Rs 1986 crores provided in the Sixth Plan has been earmarked for this sector. This compares very favourably with the expenditure in the previous plans, with the exception of the First Plan. With this massive investment in elementary education, it is proposed to enrol an additional 320 lakh children in the age group 6-14 under the system of formal and non-formal education. If these targets are achieved, the coverage of the age group to the relevant population will rise from 67% in 1977-78 to 87% in 1982-83.

While it would be difficult to deny the importance of accelerating facilities for education for the children in the age group 6-14, it has to be recognised that the target laid down by the Planning Commission is rather ambitious. The position would become clear when we consider the achievements in the earlier plans. In the Fourth Plan, the number of additional children brought to educational institutions, in the age group 6-14, was 123 lakhs. In the four years of the Fifth Plan, the number of additional children was 97 lakhs—67 lakhs in classes I-V and 30 lakhs in classes VI-VIII. Thus, the total number of additional children brought to educational institutions in 9 years preceding the Sixth Plan was 220 lakhs. The target in the Sixth Plan is almost one and a half times the combined achievement of the previous two plans period. This would be difficult to realise unless some special efforts are made to attract this age group to the educational institutions. It may also be stated that although, according to the survey made by the

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Officer on Special Duty, ICSSR, New Delhi.

NCERT, a large bulk of villages had schooling facilities within walking distance as defined by them, it would be difficult for the non-attending children to be attracted to educational institutions because of, among other things, the economic reasons which prevent them from availing themselves of these facilities.

The problem of girls education is also somewhat intractable. While the coverage of the boys of the relevant age group in 1977-78 was 82%, the girls accounted for only 51% making a total coverage of 67%. This is more so in the case of 11-14 age group, where the coverage of girls students was only 25%. To raise this percentage coverage to 77 by the end of Sixth Plan would be a formidable task for which special measures would be required.

The uneven distribution of educational facilities in the states and within the states is also another factor to be reckoned with. The Sixth Plan document has listed nine states, which are educationally backward. Most of these states are also economically backward. Since elementary education falls within the constitutional responsibilities of state governments, it would be difficult for these states to provide the requisite resources for the expansion of elementary education in their areas notwithstanding its being a part of the national programme of minimum needs.

The strategy proposed for attracting larger population of the children at the elementary stage is two-fold:

(i) the adoption of multiple entry system and special/condensed courses of non-formal education for those grown up children in the age group 9-14, who have never been to school or dropped out at an early age.

(ii) a system of part-time informal continuation education for children who entered the primary school but dropped out later.

Without questioning the policy framework laid down by the Planning Commission for achieving the targets of elementary education, it would be prudent to hasten slowly. The schemes of non-formal continuation education and multiple entry system are not new to the educational system in India. The experience in the past has revealed that after a certain stage, the effectiveness of these strategies is lessened and, therefore, it is necessary to tread cautiously in these areas.

It has been stated that an attempt will be made to reduce imbalances of regional development and special efforts will be made to identify backward areas and promote expansion of elementary education in these areas. This is a very desirable objective. The success of this programme will, however, depend on the capability of the administration at the block and district levels to look to this aspect and to take necessary corrective measures to achieve these aims. As it is, the educational administration at the district and block levels is so much engrossed with routine administrative duties that they find very little time to attend to developmental activities. Besides strengthening the administrative cadres, both quantitatively and qualitatively, it would also necessitate proper training of the officers at these levels.

The problem of wastage and stagnation at the elementary stage is also to be reckoned with. Due to various socio-economic reasons, the rate of drop-outs in classes I-V is considerable. There will, therefore, be need to provide sufficient incentives for attracting and retaining children at the elementary stage.

Adult education

A colossal effort is proposed to be made to eradicate adult illiteracy among the masses of India. Under the National Adult Education Programme (NAEP), it is proposed to educate 100 million adults in the age-group 15-35 in a period of six years beginning from 1977-78. The target for the Sixth Plan is to educate 65 million adults belonging to the age group 15-35. It has been rightly suggested that the success of the programme will depend upon an appropriate social environment, sincere motivation of adults, proper selection and training of workers, preparation of good learning materials, adoption of dynamic methods of learning, adequate supervision and guidance and constant monitoring and evaluation. The literacy programme is to be of a functional character so that it is helpful in the day-to-day activities of the learners as also to create awareness among them about the social problems.

While we do not propose to dispute the necessity of having a programme of this magnitude for removing illiteracy among the Indian masses, it is necessary that the problems that its implementation would cause should be identified.

The foremost problem facing the success of this programme is that of motivation. Unless the adult education programme helps the learner to be better equipped to solve his professional and other problems, it would be naive to expect him to attend adult literacy centres and to keep himself engaged in educational activities after he has completed the course. It is necessary that a feeling should be generated among the adult illiterates that it would be in their own interest to participate in the adult education programmes.

For the organisation of this programme, it would be necessary to select a body of dedicated workers whose approach is not purely mercenary but who have ideological affiliation with this programme. The success of this programme will depend upon the extent to which this body of dedicated workers can be identified and put on the job.

The question of follow-up is also very crucial to the success of this scheme. Unless there is a regular follow-up and feed-back, the adult learners will very likely relapse into illiteracy, defeating the very purpose of this gigantic venture.

Secondary education

The main thrust in secondary education has been appropriately laid on the qualitative improvement, vocationalisation and regulated expansion.

The additional enrolment proposed for the Sixth Plan is about 30 lakhs which is of the same order as envisaged in the 5th Plan—1974-79. This target may be somewhat unrealistic because of the increasing pressure from the elementary schools, for which a massive programme of expansion has been envisaged.

The emphasis on vocationalisation in order to make secondary education terminal in character is a step in the right direction. It has also been envisaged that secondary education should be employment-oriented and directly useful to the students. For this purpose, vocational education facilities in various institutions like ITIs, polytechnics, agricultural polytechnics, para-medical schools and other vocational training institutions are to be utilised and diversified before new training programmes are established.

Higher education

The Plan document rightly states that there has been a rapid but unplanned expansion of general higher education during the earlier plans. It has also been noted that while the enrolment in arts and commerce courses has been expanding rapidly, the enrolment in science courses has been falling in proportionate terms. In 1970-71, the enrolment in science courses in universities and colleges excluding intermediate and pre-university courses was 26% of the total enrolment. It was reduced to 21% in 1973-74 and 18% in 1977-78. This is a phenomenon, which should engage the attention of educational planners. The Plan document, however, does not appear to be much concerned about this diminishing trend.

Another important policy statement relates to the proliferation of institutions. It has been stated that no new university should be set up; colleges should be established with great restraint and only after ensuring adequate resources in terms of teachers, finance and materials. It has been stated that access to full time education should be regulated and linked to talent and aptitudes. Admissions to institutions of higher learning at the first degree and postgraduate levels should be selective and based on merit, but with adequate reservation of seats for the weaker sections.

One has only to read the relevant portions in the previous plans to find similar statements without achieving tangible results. The colleges and universities have been coming up without much restraint even in spite of the discriminatory financial policies adopted by the state governments. It has also been seen that the sufferers of the policy of regulating admissions have been generally the weaker sections of the society. It is, therefore, necessary that an integrated plan of development of higher education involving regulation of admissions to formal institutions and expansion of informal education facilities on an adequate scale should be formulated. It should also be ensured that adequate incentives are given to the weaker sections of the society so that they are not denied educational facilities because of their economic backwardness.

It has been rightly pointed out that the present trend in the UGC funding in favour of central universities and those universities where centres of advanced studies have been created has to change. Besides, creating wide disparities in the quality and standards of different universities, the discriminatory financial policies adopted by the UGC have led to lop-sided growth of higher education. The proposals about the restructuring of the UGC in order to make it a more effective instrument of the Central Government for the qualitative improvement of higher education is also a step in the right direction.

Technical education

No new colleges and polytechnics are proposed under the assumption that the present facilities will be adequate to fulfil the manpower requirements of technical personnel in the Sixth Plan. It is, however, necessary that the manpower needs should be assessed on a long term basis and the expansion of technical education planned accordingly because of the long gestation period of technical education.

Financial outlays

Finally, we come to the plan allocations for educational development for the period of 1978-83. The total provisions made for education sector is Rs 1986 crores, which compares favourably with Rs 1285 crores allocated in the Fifth Plan. Out of the provision of Rs 1986 crores, the bulk of the outlay i.e. Rs 1486 crores has been kept in the state sector. This is a desirable step. The only precaution that needs to be taken is that the states, harassed by demands from other sectors, like irrigation and power, agriculture and industry, etc. do not divert the amounts from education to those sectors. The inclusion of elementary and adult education as a part of the RMNP is expected to curb this tendency.

A study of the inter-sectoral priorities indicates larger emphasis being given to elementary and adult education, which account for almost 60% of the total outlay. This has been at the cost of secondary and university education, which have been allotted 27% of the total outlay in the Sixth Plan against 42% in the Fifth Plan and 43% in the Fourth Plan. It has, however, to be ensured that as the plan proceeds reappropriations do not take place in favour of secondary and university education. This has been the tendency during the previous plans which needs to be curbed.

Raising resources

The Plan document makes an important proposal for raising financial resources for education sector. They relate to the raising of fees at the secondary and post-secondary stages so that the educational fees bears some relationship to educational expenditure. At the secondary stage, it has also been suggested that trend towards abolition of fees needs to be halted.

The question of raising fees has been discussed at various forums. It is admitted that the present fee structure bears no relationship to the accelerating cost of education. The socio-economic and administrative implications of raising fees have, how-

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28 JUL 1980

CAMPUS NEWS

Peaceful and disciplined examinations held at Jabalpur

Jabalpur University was able to conduct its examinations for 1980 with considerable amount of success. The civil authorities and the police authorities extended their cooperation to the university not only to conduct the examinations but also to ensure a clean examination. The local press was equally helpful. The District Magistrate and the Senior Superintendent of Police were always available and visited the centres with their staff.

Nearly a year ago the commencing date of all 1980 undergraduate examinations were announced and the time-table of studies together with the names of the teachers who will deliver lectures on each day were obtained by the Dean, College Development Council of the university. The detailed time table for each examinations including postgraduate examinations were issued much in advance. The Dean, College Development Council visited the colleges frequently to ensure progress of studies and the extent of coverage of courses.

The university authorities took firm decision that no repeat examination on boycotted papers from which there would be walk out would be held. These were given adequate publicity in the newspapers and the college authorities were also informed. The university authorities arranged separate examination centres at Katni and Sihora as in addition to Jabalpur for those who were appearing privately and were not allowed to sit with regular students. The most noticeable change in the present examination arrangements was to hold the combined law examinations of 700 law students from two private colleges and the law students of the university teaching department in the university itself in spite of many oppositions and odds. This step was taken because the law examinations in the past had become 'farce' and copy was also used to be written from outside.

The undergraduate examinations of the university commenced early in March. About 25,000 students appeared ar the various university examinations. There was no walkout or boycott or tearing of papers. The Vice-Chancellor, Shri Kanti Chaudhari, with a team of senior professors and other members of the teaching staff inspected all the colleges in both the morning and evening shifts to prevent copying. All teachers of the UTD were present at the time of law examinations. In all 1843 cases of unfair means were detected and booked. These cases were detected mainly through body search in which the college authorities themselves also participated. The university is now in a position to certify that it has been a cleanest ever examination. The law examination could be regarded as the cleanest of all law examinations held in northern and eastern Indian universities.

One of the noticeable features for these examinations has been that there has been no students demonstration during the year under review because of the strong action taken by the university. No person other than the examinees were found near the examination centre.

Present state of things is the culmination of the dangerous socio-political trends of the past few years. Just a few non-students, playing in the hands of an evil, coterie have been attempting to disrupt, to thwart the progress of education. The reform in higher education and reform in the examination system is called for but such a complex national problem cannot be solved by one university alone. As long as the present examination system lasts, prevalent chaos in the examination system cannot be allowed to be turned into anarchy. It has been found that bold action pays dividend as it paid this year. A growing 15 years old malady had been halted this year by combined efforts of the university teaching community, civil authorities and a very large number of good students and general public. It is therefore not a matter which is beyond repair. Inspiration always came from the Chancellor. His support to the university especially in the conduct of examinations has been most praiseworthy.

A new campus for Calcutta Varsity

Calcutta University for about six decades of its existence, from 1857 to 1904 was nothing more than an examination-taking and degree-giving body. Towards the end of that period, however intense nationalist pressure succeeded in engineering even among a section of the alien rulers an inclination to develop the university in the true sense of the term where postgraduate teaching and research would be carried out and a local intellectual elite could be created. This will be apparent from the following excerpts from the convocation address delivered in 1904 by the Chancellor Lord Curzon, himself a scholar of great reputation and a Fellow of the All Soul's College at Oxford:

> "...the ideal University that we are contemplating should be centrally situated; it should be amply and even nobly housed; it should be well equipped, and it should be handsomely endowed. In these conditions it would soon create an atmosphere

of intellectual refinement and culture; a moral quality and influence would spring within it, and tradition of reverence would grow up like creepers round its walls".

However, Sir Asutosh Mookerjee during his eventful years of Vice-Chancellorship (1906-14 & 1921-23) found, to his utter dismay, that the sentiments of Lord Curzon were not redeemed by the Government. But Sir Asutosh and a galaxy of eminent nationalists like Acharyya Prafulla Chandra Ray, Sir Nilratan Sircar, Maharaja of Darbhanga, Sir Taraknath Palit and Sir Rashbehari Ghose, built up the Post-Graduate Departments of the University of Calcutta as we see today. In these developmental activities, contributions from the alien Governments both at the Centre and at the State levels were minimum. And it is a historical truth that Sir Asutosh refused Government help but did not surrender the autonomy of the University. So he had to depend almost exclusively on the generosity of the Bengalee and Indian Zamindars and millionaires. As a result, the University grew up in a haphazard way, all over the city of Calcutta, wherever and whenever little bits of land were available. The University of Calcutta is now spread over a total of 20 or so acres of land in seven different locations and over 20 different sites.

With the advent of Independence, the whole perspective of the Government-University relationship underwent a sea-change and the step-motherly attitude of the Government to the University began to change for the better, especially during the life time of Dr. Bidhan Chandra Roy. However, the age-old mutual suspicion between the Government and the University lingered on. No major effort or thought has till recently been given by the Government towards consolidating the University in a few major campuses so that it can discharge its academic responsibilities as the modern age demands. It is indeed, a matter of rejoicings that the present State Government has finally decided to hand over, in stages, a vast area of about 100 acres, at present occupied by the Presidency and the Alipore Jails, in one of the best localities in the heart of Calcutta to the Calcutta University in exchange of some of its out-lying properties. The site in the vicinity of the National Library, the Zoological Gardens, the University College of Medicine, the Seth Suklal Karnani Memorial Hospital, the Rabindra Sadan, and the Birla Planetarium. It is also well-connected by public transport and will be near two major stations of Underground Tube Railway. This new University campus at Alipore will accommodate some of our major departments like Education, Economics, Political Science, Sociology, Literature and Languages, and some of the research institutes and centres like South East Asian Studies Centre, Electron Microscope Centre, Guha Institute of Biochemistry, Institute of Molecular Biology, etc. This new campus will have adequate provisions for student and staff amenities like, Campus Library, Auditorium Lecture Theatre, Exhibition Hall, Canteen and Sports Complex.

Survey of university hostels

Tata Institute of Social Sciences, Bombay, at the instance of the University Grants Commission following a suggestion of a Vice-Chancellors conference in 1975 that hostel facilities were far from aduquate, has conducted a survey of living conditions of students in university and college hostels. The survey has recommended that each room or dormitory could accommodate four to ten students. Provision for separate study halls should also be made. The report however says that this pattern should be applicable only to the undergraduates as it may not be suitable for postgraduate students. The University Grants Commission would be setting up a committee to examine these recommendations.

The survey found that nearly half of the hostels in the country were unable to accommodate all those who are desirous for admission. While the majority of the hostels were adequately maintained, large number were poorly looked after. However, there had been a special efforts after independence to provide hostel facilities for women. In fact, more women's hostels were built after independence than men's.

The survey said the provision of facilities in women's hostels were generally adequate and better than in men's hostels. The cost of living was also lower. While many of the men's hostels were known to be used for nefarious purposes, there were hostel rooms in Calcutta that were handed down from student to student on a 'pugree, basis which may rise with each subsequent occupant.

One of the main findings of the survey that the best provision of hostel facilities were to be found in Punjab, Haryana, Kashmir, Himachal Pradesh, Delhi, Chandigarh and to a lesser extent in U.P.

The worst provisions of facilities, according to the survey, are to be found in Bihar, Orissa, West Bengal, Assam and the North-Eastern States and the Union Territories.

The survey revealed that the hostels in Marathwada were the poorest in terms of facilities. However, charges for students were also very low. But for these hostels, in spite of their sub-standard conditions, many students would not have been able to pursue higher education in this region.

It was found that more than half of the hostels were understaffed. The number of inmates in these hostels exceed 50 for every single warden or senior staff member. In fact, in a few of these, the ratio even exceeded 1:100. The survey recommended that steps would be taken to bring down the ratio to 1:50. It also suggested that workshops should be organised for wardens in areas like budgeting mass management and nutrition.

New Curriculum for Biology

Delivering the convocation ddress at the Osmania Uniersity, Hyderabad, Prof. V. Ramalingaswami, Director-General of the Indian Council f Medical Research, stressed he need to draw a new biology urriculum for schools and coleges, cutting across several disciplines so as to catch up with the 1980s which may well be the decade of biology. Asserting that research in the developing branch of molecular biology ought to be a continuous process he suggested consultations between universities and industry to help develop skills and competence for resolving the country's health problems and speeding up overall development. He said that while the 1960s and 1970s could be considered significant in the application of agricultural technologies in India, the 1980s might well be called the age of primary health care. It was necessary to provide a package of integrated services involving basic health care, protection against communicable diseases and control of family size in the coming decade through the application of recent spectacular development in biological sciences. Referring to the progress in fundamental biology over the past two decades he said that it was now possible to take the human genes apart, analyse them and incorporate them in the bacteria so that the bacteria can make the end products of gene action.

The benefits of discoveries in molecular biology might hold out answers to the genesis of cancer, problems of ageing as also reasons for high blood pressure, heart attacks and strokes. Though recombinant DNA technology was hardly seven years old, it had already been demonstrated that it was possible to reorder genesis material at will. The benefits of genetic engineering were not necessarily confined to medical and health fields. He pointed out and hinted at the possibility of producing vastquantities of useful chemicals cheaply and efficiently. Biotechnology was yet another major attraction which could be used for recycling agricultural and industrial wastes into useful products. Notwithstanding all these benefits of genetic engineering, there were also certain hazards that needed urgent attention. Among the fears expressed about the recombinant DNA technology was the risk involved in releasing potentially dangerous forms of micro-organisms into environment.

Presenting the report, the Vice-Chancellor of the University, Dr. G. Ram Reddy, said that in order to promote research in areas which are of immediate relevance, it had been decided to establish two centres—one for energy studies and another for pollution studies. These would be interdisciplinary in character.

Teaching symposium in pharmaceutical sciences

A national seminar on recent advances in research in Pharmaceutical Sciences and a symposium on teaching of pharmaceutics subjects were held at the Department of Pharmaceutical Sciences, Andhra University, Waltair. The seminar and symposium were inaugurated by the Vice-Chancellor of the University, Shri M.R. Apparow. In his address, the Vice-Chancellor mentioned the research achievements of the department and stressed the need to hold seminars of this kind for dissemination of scientific information and for bringing researchers of various institutions together.

Prof. V. Subba Rao, of the Department of Pharmaceutical Sciences and Principal, College of Science & Technology who presided, observed that there would be a wide gap in the production of drugs and their demand in the years to come. This should be obviated not only by increasing the production of drugs, but also by reducing the dependance on drugs by providing better conditions of health and hygiene.

Bicentenary of Indian Press

The Department of Journalism, Banaras Hindu University, in collaboration with the Indian Journalism Education Association organised the first Indian Journalism Congress in Varanasi to mark the bi-centenary of Indian press. The Congress emphasised the need of close cooperation between the professionals and educationists in the field of mass media.

Mr. Justice A.N. Grover, Chairman of Press Council of India, inaugurated the Congress. In his address he stressed the need to start a national dialogue on the raising of the standard of journalism and ensure the freedom of Press. Referring to the role of Press Council, Justice Grover said that the Council was unique of its kind. It derived its authority from an Act of Parliament though it had no punitive powers. The Council had been designed to function as an impartial arbitrator on issues affecting the free flow of information in general and press freedom in particular. The press is predominantly urban and efforts should be made to reach the rural population where illiteracy and poverty are the main hurdles. Mr. Grover added that after independence, the role of

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SRI VENKATESWARA UNIVERSITY
TIRUPATI
Addendum to Advertisement No. EII-2/1980(2), dated 15-5-80

Sl. No. 1 of the Advertisement No. EII-2/1980(2), dated 15-5-1980 be read as follows :

I. Teaching

"1. **State Bank of India Chair S.V.U.P.G. Extension Centre, Kavali/Kurnool**
Professor in 'Rural Banking & Development of Rayalaseema'
. . . One post"

REGISTRAR.

the press could no longer be considered as an adversary of the Government which needed to be disciplined and curbed. The need of the day was the establishment and preservation of freedom of the press which had become vital in a democratic society. In such a society the press was the dominant and major institution of public life of the nation. He also referred to the relations of the press with other organs of the government the legislature, the executive and the judiciary. He said that this was the most sensitive area and the journalists had to dwell with action. The freedom of the press means the freedom of the journalists. They should report the events accurately and most analytically subject to the limitations imposed upon them by the framework of a well-laid policy of the newspaper.

The Congress had a special session on the problems and prospects of language press. Several papers were presented on subjects which included, among others, monopoly press, freedom of the press, training of correspondents, credibility and journalistic freedom, amalgamation of news agencies, re-assessment of the role of mass media and the rural press.

Dr. Hari Narain, Vice-Chancellor of Banarus Hindu University, while welcoming the delegates emphasized that the press had a special obligation towards the people. The press should bring to the light the problems and aspirations of the citizens.

Mr. A.K. Jain of the Nav Bharat Times was the chief guest. He stressed on the various problems of the press. Dr. Nadig Krishnamurti of Mysore University who presided over the Congress opined that the teachers of journalism should be included in the different committees like the Press Council, Press Commission, etc. Prof. A.K. Banerjee of the Journalism Department of BHU outlined the objectives of the Congress and gave the report of the Indian Journalism Education Association.

The seventh annual meeting of the Indian Journalism Education Association was also held during the Congress. It elected Prof. A.K. Banerjee, Head of the Department of Journalism, BHU, as its President and Prof. L.N. Gokhale of Poona University as General Secretary.

The second session of the Congress will be held in Bombay in January 1981 under the auspices of Rajendra Prasad Institute of Communication of Bhartiya Vidya Bhavan.

IAS advisers for Bihar VCs

The Bihar Government has appointed IAS advisers to the Vice-Chancellors of State universities in the state. According to a notification issued by the Personnel Department Mr Deepak Gupta has been appointed adviser to the Vice-Chancellor of Patna University. At Present he is joint secretary in the Health Department.

Besides, Mr V. Jayshankar, Joint Secretary in the Public Works Department, Mr A.K. Upadhyaya, Joint Secretary in the Finance Department, Mr Shankar Prasad, former district magistrate of Katihar, Mr Beck Julius, former district magistrate of East Champaran and Mr P. Seth, Deputy Director of Consolidation, Arrah have been appointed advisers to the Vice-Chancellors of Bihar, Magadh, Bhagalpur, Ranchi and Mithila universities respectively.

The appointment of advisers has been made in view of the deliberation of Vice-Chancellors' conference held on May 10 in Raj Bhavan under the chairmanship of the Chancellor Dr A.R. Kidwai. Dr Kidwai at the conference felt the need to appoint IAS Registrars for all the universities in the state.

It was maintained that the present administrative set-up of the universities could not maintain discipline and law and order on the campus and deal with unauthorised occupation of hostels and teachers' quarters. It needed IAS Registrars to deal with such rowdy elements with an iron hand.

The IAS advisers will now perform the task decided at the conference of Vice-Chancellors.

The Government is also considering to appoint pro Vice-Chancellors soon for all universities.

Card & code system for examiners

According to newspaper reports, the Andhra Pradesh Government has decided to introduce card and code system for the selection and appointment of examiners for evaluation of answer papers of public examinations. This system would come into force from SSC examination held in March 1980. The system envisaged the creation of a master file, the particulars of all qualified teachers in different subjects. The master file had since been built up with particulars of teachers from different managements. The seniority list of teachers subjectwise had been prepared by computer, identity cards and appointment orders were also sent to teachers. Their lists would be updated every year.

The Government had also decided to store question paper packets in the district treasuries, sub-treasuries and at police stations and at centres with police guard. These steps had been taken because of the reported leakage of SSC public examination question papers in recent times. This system required the active cooperation and involvement of the officers of Director of Treasuries and Accounts and Police Department and the Government had been able to implement the system successfully. The Government has exempted the physically handicapped students (blind, deaf and dumb) for VII class common examination and SSC public examination with a view to encouraging them.

IARI transforms Delhi village

Dr H.K. Jain, Director, Indian Agricultural Research Institute, New Delhi, told newsmen at olumbi-Kalan village in the lipur block of the Union Terriory of Delhi that India's poten- al for agricultural production much greater than that of nany western countries and our roduction technology is one of he best in the world. However nly one-third of the production otential is utilised. Dr Jain aid that we had millions of small nd the marginal farmers with ery little resources. He added hat IARI's experiment was only a small beginning in the study of intensive farming by the transfer of the modern technology, the scientists were generating. The first task of the scientists was to organise the small farmers into viable groups for the optimum use of resources. After discussions with the farmers a group of 10 harijans owning one acre of land each was formed. A package of practices relating to wheat production was initially adopted four years ago. It has by now spread to more than 30 farmers. The farmers increased their wheat production from 14 maunds per acre to 40 maunds per acre. Some have even produced up to 55 and 60 maunds per acre. Following this remarkable success mady by the small farmers, even the big farmers in the area were adopting the same methods. The farmers had to face problems with the banks because of certain outdated rules governing lending. For example, the bank in the area would advance money to the farmer solely for agricultural purposes. If a farmer wanted credit for buying cattle or any other such requirement he has to go to another bank which sends him back to the bank in his area. On the advice of the IARI scientists, the Harijan farmers replaced bajra and maize with paddy crops with an yield of 40 maunds per acre. In between the wheat and paddy crops they cultivate vegetables. After adoption of the new technology the income of the farmers had increased.

Delhi Executive Council meets

At the last meeting of the Executive Council of Delhi University, many members pointed out malpractices in examination that were growing. The Council accepted members suggestion to set up inspection squads which will make surprise visits at all examination centres. In a bid to improve the south campus and also to decentralise the examination branch the Council decided that all south campus colleges should be looked after by a branch of the examination department. The Council also approved fresh quidelines to punish students who indulge in malpractices.

It was felt that the procedure to penalise the culprit is not without loopholes. It was decided that a committee, including legal experts, should be set up to go into the cases which are doubtful so that innocent students are not punished.

To encourage blind students, the Council decided to give preference to the blind candidates in the appointment of lecturers and also to institute two more fellowships for blind students during M. Phil.

The working of the School of Correspondence was also criticized. The members pointed out the standard was going down. The lectures do not reach students in time.

One of the Principals of the School suggested to lower the percentage from 40 to 33 for new entrants in view of the falling admission rates but this was rejected by the Council. The Council appointed a committee to go into the Delhi University Students Union's demand for direct representation on the Academic Council.

SNIPES lays stress on physical conditions

The Society for the National Institutes of Physical Education (SNIPES) has suggested that emphasis should be laid on physical conditioning for achieving better results in national and international meets. The Chairman of the SNIPES, Dr Amrik Singh, said that norms for physical conditions should be strictly adhered to and physical conditioning of every trainee should improve from one coaching camp to another. Every trainee would therefore be provided with a detailed report on his physical conditioning performance after the conclusion of the first camp. He would be required to attain those standards on his rejoining the camp after a lapse of one or two months. In case he falls short in the standards achieved by him in the first camp, he should be excluded from the second camp.

According to Dr Amrik Singh, the concept for gymnastics should be popularised as gymnastics was nursery for all sports. He said that SNIPES would shortly prepare a detailed techni-

Association of Indian Universities
D.D. Upadhyaya Marg, New Delhi-110002
Correspondence Course in Evaluation Methodology & Examinations

Applications are invited from College/University Teachers for admission to a Basic Level Correspondence Course in EVALUATION METHODOLOGY AND EXAMINATIONS. The duration of the course will be six months (1st July, 1980 to 31st Dec., 1980). The course is likely to be conducted from four regional Centres (Mysore, Bombay, Shillong and Delhi) and will be coordinated by the Research Cell of the Association. A personal 'Contact Programme' at the centres is also planned.

Requests for prospectus and prescribed application forms, accompanied by a crossed Indian Postal Order for Rs. 5/- drawn in favour of the Association and a self addressed stamped envelope (45 paise) should reach the undersigned. The last date for the receipt of applications in the prescribed form, will be **July 15th** for non-sponsored and **July 31** for sponsored candidates.

Prof. V. Natarajan

cal booklet which would be circulated to all schools, colleges and universities.

At its meeting in Delhi the SNIPES decided to provide adequate assistance to akharas of repute in the capital. Imported sports equipments would be provided to the national sports federation, state sports councils and other organisations whenever the equipment was not in use at the NIS.

The question of opening of the NIS eastern centre in the Salt Lake area in Calcutta has been deferred until July 1981 by which time certain infrastructure to run the centre would be completed.

Nehru fellowships announced

The Jawaharlal Nehru Memorial Fund has announced the award of Jawaharlal Nehru Fellopships to Dr T.C. Anand Kumar, Dr Bodhayan Chattopadhay and Mr K.S. Srinivasan. Dr Anand is Associate Professor of Experimental Biology at the All-India Institute of Medical Sciences, New Delhi. He is recipient of S.S. Bhatnagar Award for biological sciences in 1977. He has demonstated that insulin nasal spray could replace the current practice of daily injections of the drug in the management of diabetes mellitus. Dr Anand Kumar proposes to utilise his fellowship to extend his studies to the development of sprays for therapeutic purposes.

Dr Chattopadhyay is a well known scholar in the field of Indian economic development. He has been engaged in comparative studies of agricultural development both in India and abroad. He has been a consultant to a number of UN bodies including UN Research Institute for Social Development and the Economic Commission for Asia and the East. Dr Chattopadhyay will devote his fellowship to a system-analytic study of problems of growth and development in Eastern India since 1900.

Mr Srinivasan has been a student of philosophy and literature. His critical study of the literary aspects in the Ramayana in Sanskrit and Tamil reveals him as a widely read scholar. Mr Srinivasan will utilise the fellowship for a study of the 'Cultural Exchange across the Vindhyas' which will cover the interaction over the ages between the North and the South in the cultural literary and mythological fields.

The Nehru Fellowship is tenable for two years and carries a monthly stipend of Rs 3,000 and an annual contingency grant of Rs 10,000.

AICS approval for new sports policy

Field Marshal S.H.F. Manekshaw, President, All-India Council of Sports, is understood to have given a green signal to the national sports policy. The recommendations are now with the Ministry of Education, Government of India and the draft is expected to be tabled before the Lok Sabha during the current session.

The final version of the draft has been approved after making the changes suggested by different state sports departments, sports councils and all those who were concerned with sports. The draft sub-committee was headed by Mr M.R. Krishna with Mr R.L. Anand, Director, NIS, Patiala and Dr Robson as its members.

The revised sports policy envisages that the country should concentrate upon hockey and athletics in which India has been doing fairly well in the international and olympic competitions. For improvement in this regard it has been suggested that all the central schools, schools run by Railways, Defence and other Government agencies should include hockey and athletics in their sports curriculum.

The state sports councils and the Association of Indian Universities should carry out direct or through the district sports councils a survey of the existing facilities for sports available in educational institutions and draw up time-bound programmes for the consideration and approval of State Governments and the Centre so that during the next two plan periods minimum physical facilities are provided at various levels.

PERSONAL

1. **Mr. Saiyid Hamid, Chairman of the Staff Selection Committee has been appointed Vice-Chancellor of Aligarh Muslim University.**
2. **Mr. B.C. Negi, Secretary of the Education Department of Himachal Pradesh, has taken over as officiating Vice-Chancellor of Himachal Pradesh University from Dr. Ganpat Chander Gupt, who has resigned.**
3. **Dr. A. R. Kidwai, Governor of Bihar and Chancellor of Universities in the State, has appointed Prof. Uma Nath Jha, Dean, Faculty of Arts and Head of the Postgraduate Department of English, L. N. Mithila University, as Pro-Vice-Chancellor of the University.**
4. **Prof. S. K Bilgrami, Head of the Department of Botany of Bhagalpur University, has been appointed Pro-Vice-Chancellor of the University.**
5. **Dr. K.N. Prasad, Head of the Department of Economics of the Patna University and former Vice-Chancellor of the university has been invited by the US Government to study the educational and economic systems of USA and to deliver lectures on Indian economic problems.**
6. **Prof. V. Natarajan, Project Officer (Exam), AIU, has been invited to present a paper entitled 'Using Latent Trait Theory to Evolve Sample Free Item Analysis' at the Fourth International Conference on Educational Testing at Antwerp, Belgium during June 24-27, 1980. He will also be visiting the Unesco Institute of Education at Hamburg and a few other universities in the Netherlands, Belgium and West Germany.**

UGC history panel stresses emphasis on research

A panel of experts on history appointed by the University Grants Commission has recommended that the history of at least one region other than India should be included in the syllabi of Universities. The panel also feels that students should acquire a working knowledge of at least one classical or modern language in addition to English and study at least one subsidiary subject from the field of social sciences and humanities. These recommendations have been forwarded to the various universities.

On research, the panel has said that while the volume of historical research in India has been steadily increasing, there has been no corresponding improvement in its quality. Ph.D. degree is awarded in many cases for thesis which are little more than summarisation of raw data. The panel has suggested introduction of an intermediate degree involving some research before enrolment for the Ph.D. degree. In the field of research the major emphasis has so far been on political history leaving other areas relatively unexplored. The panel's report based on regional workshops observes that many scholars have greater aptitude for research rather than for teaching. Therefore the universities where history is taught at the M.A. level should develop their schools of research. Its members should be encouraged to teach the BA and MA courses but there should be no bar to the employment of research professors and fellows who concentrates primarily on research and make the centres sources of skills and ideas. It also wants that the Indian scholars should be involved in international projects of historical research, especially those sponsored by the UNESCO.

The panel has recommended that the broad foundation for specialisation should be laid during the honours course, the pass course giving general instructions with a wider coverage.

The M.A. course in history should enable students to proceed directly to research by providing an adequate knowledge of history as well as other equipment which the student should require for taking up research. The panel feels that primary object of teaching at the university stage is to produce trained workers for the continuation and development of historical studies.

Prof. R.S. Sharma of the Delhi University was the convener of the panel. It organised four workshops at Gauhati, Mysore, Amritsar and Baroda.

The history panel is one of the several such panels appointed by the UGC to advise it on the objectives of introducing inter-disciplinary approach and production of reading materials, besides, faculty improvement and methods of teaching and evaluation.

Enrolment in higher education declines

The growth rate of higher education in the country, according to Prof. Satish Chandra, Chairman, University Grants Commission, has considerably come down during the past few years. While delivering the tenth Raja Ramdeo Anandilal Podar Memorial Lecture in Jaipur, he said that the average growth rate of higher education had come down from 12 to 14 per cent in the sixties to a cumulative growth rate of less than two per cent during the Fifth Plan. He said that with the enormous expansion of education, the capacity of new students in terms of sophistication, knowledge and critical thinking was infinitely superior to that of the older generation. But this had happened with only the top ten to fifteen per cent of 'favoured students' and the bottom thirty per cent were unable to receive the benefits. This had created disparity among the students.

Those who have been denied the fruits of new knowledge due to their inability to get into the prestigious institutions know instinctively that they have been denied justice by the society. That is the reason for tension in the system. Prof. Chandra said that the annual expenditure on education was Rs. 2500 crores which was second only to defence but it was less than two per cent of the gross national product. It was a waste of money to open more and more colleges on political considerations. He stressed the need for qualitative development in higher education.

Universities to take up wildlife research

The University Grants Commission has written to the Vice-Chancellors suggesting that universities which have the necessary infrastructure as well as talent, take up both studies and research in wildlife. Conservation of wildlife is assuming a universal problem. In recent years a few universities have shown some interest in research projects relating to wildlife. Besides the recognised school developed by Dr Salim Ali, the studies that have been undertaken are: Gir Lions jointly; by Bombay Natural History Society and Saurashtra Univeriity studies on zoo-biology by Mysore Zoo and University of Mysore; ecological studies on Koziranga wildlife sanctuary by Gauhati University; population studies on tigers in Kerala forests in the Periyar Sanctuary area by Union Christian College, Alwayes and eco-system studies in Bandipur National Park by Madav Gadgil Group at the Indian Institute of Science, Bangalore.

These are some isolated examples and unrelated to one another and may not help in creating real awareness of the totality and multi-disciplinary nature of studies of wildlife. Much of the work related to wildlife studies and supported by the personnel of the Forest Departments and their wildlife wings. The participation of universities in these studies is also negligible. It is however generally true that the departments of zoology in Indian universities have paid little attention to the study of wildlife with reference to the problems of their biology, ecology, conservation, behavioural studies, etc.

Under these circumstances, the UGC has now circulated a list of illustrative research topics and problems concerning wildlife. These cover status surveys of some of the fast disappearing species. A beginning towards wildlife education has already started in the sense that for the first time the UGC has approved grants of Rs. 7 lakhs for a number of research projects in wildlife. Nearly half of the total grant is meant for studies of memmals. Other research topics include the forest eco-system of western ghats of Karnatka besides the behaviour of migratory birds and Rhesus monkeys. An ecological survey of the sprawling Chilka Lake in Orissa is among the research projects which are before the Commission for its approval. Prior to this the Commission had organised a seminar in Shilling to bring together scientists from universities, forest departments, Natural History Society and Wildlife Boards to discuss the emerging urgent problems related to wildlife in India. The seminar helped in identifying specific projects which the universities could take up on their own or in collaboration with the wildlife board.

Environment research panel

The University Grants Commission has set up an expert committee to promote studies and research in environmental sciences. This is a follow-up to a national seminar organised last year which made specific recommendations for the development of environmental education at the university level. Only a few universities in the country are at present offering master's degree programmes in environmental sciences with emphasis on biological aspects or physical sciences. These include Jawaharlal Nehru University, Delhi, Awadhesh Pratap Singh University, Rewa, Saurashtra University, Rajkot, Madurai University and the North-Eastern Hill University in Shillong. A few other universities have included some of the courses of studies in the normal master's degree programme.

During the Fifth Plan period a number of projects have been funded by the UGC in the areas of environmental sciences. One of the major projects in progress relates to the process of decertification in Saurashtra undertaken by the Department of Biological Sciences, Saurashtra University.

Pondicherry law college steps up publication programmes

The Government Law College, Pondicherry, was established eight years ago for imparting legal education in the Union Territory. Within this short period it has attained the status of a full-fledged Law School having a contingent of full time lecturers. Senior members of the Bar are also being invited to give lectures on procedural laws. Another special feature in this regard is that this college is having two full-time research assistants who are devoting their time on research and helping the postgraduate students in preparing their dissertations. Their service is also deployed for conducting various seminars and conferences in the field of law. Instructions are not only imparted at undergraduate level but also at postgraduate level in two branches viz. Criminology and Criminal Administration and Administrative Law and Labour Law.

The institute has unique privilege of conducting the All-India Moot Court Competition every year for the purpose of selecting the Indian team to participate in the International Moot Court Competition to be held in Washington under the auspices of Jessup International Moot Court Society.

The college is running Legal Service Clinic wherein the students and teachers are involved in rendering service to the poor and downtrodden. The college has been organising a number of seminars, symposia and extension lectures covering various aspects of current socio-legal problems. The college has streamlined a foundation course on the Criminal Justice System with a view to assisting the officials of Pondicherry Government in preparing for the criminal judicial tests. The college has been organising a number of seminars on Law and Social Defence, Suppression of Immoral Traffic, participation in Social Defence, etc. in collaboration with the National Institute of Social Defence, Government of India, New Delhi, every year. It also brings out an annual professional law journal entitled 'Law and Social Problems'. The first three volumes devoted to women and law, population and law and child and law, have been released and the fourth volume devoted to labour and law will be brought out during the academic year 1980-81. The college has evolved a scheme under the practical training programme for the final year B.L. students under which eminent jurists, lawyers and judges are invited to deliver a series of lectures on professional ethics and conduct.

The college under the National Adult Education Programme is planning to establish community legal service projects in Pondicherry which may cater to the needs of everyone to solve their day-to-day legal problems. Starting of joboriented diploma courses like cooperative law and management, comparative law and jurisprudence etc. are some of the other future plans of this institution.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bansal, Ashok Kumar. A study of robustness in statistical inference for non-normal distributions. University of Delhi.
2. Khandpur, S.L. Magnetohydrodynamic boundary layers. Agra University.
3. Malhotra, Anand Mohan. A study of block-wise error-locating/correcting and generalized codes. University of Delhi.
4. Singhal, Ravi Kumar. A theoretical study of fluid flows with special reference to dusty viscous, viscoelectric MHD flows. Agra University.
5. Tomar, Ramesh Chand. Biorthogonal polynomials suggested by classical orthogonal polynomials. University of Delhi.

Physics

1. Ahmad Raza. Preparation and applications of indium tin oxide in photothermal and photovoltaic energy converson. I.I.T., Delhi.
2. Chavan, Sopanrao Hanamantrao. Studies of ferroelectric crystals—triglycine sulfate, triglycine selenete and triglycine sulfate—selenete. Shivaji University.
3. Chowdhry, Ravinder. Physico-chemical analysis of inks on paper in context of questioned document examination. University of Delhi.
4. Dattagupta, Jayasri. Fault graphs and their applications to fault detection and diagnosis of digital circuits. University of Calcutta.
5. Gupta, V.P. A theoretical investigation into the effective charge parameter and dielectric polarization in ionic crystals. Agra University.
6. Harsh, O.K. Intensity of high energy plasma satellites in the X-ray emission spectra of solids. Agra University.
7. Jain, Vimal Chandra. Application of exchange charge polarization model in studies on the dielectric and elastic properties of ionic solids. Agra University.
8. Joshi, Janardan. Excited state relaxation and energy transfer studies in rare earth ions. Kumaun University.
9. Lohiya, Daksh. Particle creation in de Sitter universe. University of Delhi.
10. Parameswaran, K. Studies on ionospheric absorption at the magnetic equator. University of Kerala.
11. Prabhat Kumar. Investigation of some problems of accelerated frames and gravitational fields. Agra, University
12. Ramakishore, P. Field and frequency effects on nematic liquid crystal mixtures. Nagarjuna University.
13. Rana, J.P.S. Investigation of lattice vibrations and allied properties of ammonium and silver halides. Agra University.
14. Sardesai, Pandurang Lakhba. Studies in light scattering. Marathwada University.
15. Sharma, Ramesh Chandra. High power electromagnetic wave propagation in plasmas and semiconductors. Agra University.
16. Singh, Ramadhar. Electrical behaviour of undoped and highly doped vanadium dioxide crystals. University of Delhi.
17. Sinha, Krishna Nand. Molecules in the solar atmosphere. University of Gorakhpur.
18. Sreenivasan, S. Analysis of the infrared internal vibrations of certain crystals. University of Kerala.
19. Srivastava, R.L. Application of plasma oscillations to the X-ray absorption of metal. Agra University.
20. Supe, Dinkar Shankarrao. Some studies in time dose relationship in radiotherapy. Nagpur University.
21. Venkata Krishna, Komanduri. Electrical transport properties of pure and doped p-type InSb and n-type PbTe semiconductor films. University of Delhi.

Chemistry

1. Agrawal, Indu. Chemical study of essential oils from some indigenous aromatic plants. Kumaun University.
2. Agrawal, P.C. Study of some metal sulphide electrodes. Agra University.
3. Amrita Kumari. Studies on mixed haloantimonates (III). I.I.T., Delhi.
4. Basu, Aparajita. Applications of thiosalicylamide in electroanalytical techniques. University of Calcutta.
5. Bhargava, Shoba. Some abinito studies using FSGO model. University of Delhi.
6. Bhoi, Chhaganbhai Dhulabhai. Styrenation and epoxidation of semidrying oils. Sardar Patel University.
7. Biswas, Himadrikumar. Physico-chemical aspects of dye partition technique for the determination of functional groups in detergents and high polymers. University of Calcutta.
8. Brajesh Kumar. Interaction of tartaric acid with copper (II), zinc (II), antimony (III) and vanadium (IV). University of Delhi.
9. Das, Susil Kumar. Application on substituted selenoureas in the determination of platinum metals. University of Calcutta.
10. Dixit, Kirtiwardhan Rajendrakumar. Studies in some mixed ligand complexes of gallium (III) and indium (III). Nagpur University.
11. Dubey, M.C. A polarographic study of the influence of various experimental conditions on the electrode kinetics of the irreversible reduction of some inorganic depolarizers. Agra University.
12. Durga Kumari. Phytochemical study of Schistocarpha bicolor and gardenia gum and synthesis of some recently isolated flavonoids. University of Delhi.
13. Gautam, Mamta. Analysis of metals by solid-liquid separation after liquid-liquid extraction. I.I.T., Delhi.
14. Gupta, Kamal. Oxidimetric determination of some organic compounds. University of Jabalpur.
15. Gupta, P.M. Studies on interfacial adsorption of some surface active substances and their role in the stabilization of emulsions. Agra University.
16. Indra Rani. Studies on transition metal chelates of some oximes. University of Delhi.
17. Jain, Ravi Kumar. Synthesis of some reactive methylene compounds with chemotherapeutic activity and their use as analytical reagents in laboratory. Agra University.
18. Kaushik, S.M. Solid state, thermal and photochemical decomposition studies on fluoroperoxozirconates. I.I.T., Delhi.
19. Kesrale, Suresh Bhujangrao. Kinetics and thermal decomposition of some transition metal complexes. Marathwada University.
20. Khanduri, Budhi Ballabh. A new pentaene antibiotic: Pentaene G^8. Agra University.
21. Kulshreshtha, Hemant. Investigations on analytical potentialities of some heterocyclic hydrazones. University of Delhi.
22. Masohan, Asha. Study of sulphur compounds in Darius crude. Garhwal University.
23. Mathur, Rajeev Mohan. Studies on the chemical properties of sulphonated eucalyptus wood. Garhwal University.
24. Nageswar, Y.V.D. Synthesis of certain heterocyclic systems from embelin. Kakatiya University.
25. Nigam, Satish Chandra. Synthesis of some nitrogen heterocycles and their pharmacological studies. University of Delhi.
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Priorities in Educational Development

(*Continued from page* 328)

ever, to be taken into consideration while deciding this problem.

Another important suggestion, made in the context of technical education, relates to the absence of interaction between industry and technical education which has led to a sort of divorce between them in the field of technological development leading to a mis-match between supply and demand. It has, therefore, been suggested that the industry should assume greater responsibility in undertaking joint financing by industries, technical institutions and the government of technical education and development programmes. This could be done by sponsoring and financing of specific research and development projects by the industry at various institutes of technology and other selected institutes according to time bound and goal-oriented programmes. The industry could also consider the adoption of existing polytechnics for training its manpower by linking the job specification of its establishment to technical education. It could also avail of facilities for non-formal courses and continuing education as part of the career development plans for its employees. These measures will go a long way in integrating technical education with industrial development as also providing the much needed resources for the development of technical education.

To Sum up, the Sixth Plan makes a bold attempt to give higher priority to elementary and adult education programmes, which have been rather neglected in the previous plans. It emphasises qualitative improvement of secondary and post-secondary education and seeks to place a moratorium on the unplanned proliferation of institutions. All these steps are in desirable direction and if implemented, will help in correcting the imbalances that have characterised the development of education in the previous plans. The question, however, remains whether or not we have the political will to implement the programmes, whose beneficiaries will primarily be the traditionally deprived sections of the population and not the urban elites, who have an easy access to the corridors of power. It is difficult to hazard a guess at this stage. □

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Readership in Anthropology—(For First Post)

(a) Intensive field work experience in tribal/Peasent Societies.

(b) Specialization & teaching experience in one of the following branches: Kinship, Social Structure, Peasant Social System; Social Change in Tribal Peasant Society, Political Anthropology.

Readership in Anthropology—(For Second Post)

(1) Specialization & teaching experience in one of the following branches :
(a) Human Growth & Development (b) Derenatoglyphics (c) Physiological Anthropology (d) Human Cytogenetics (e) Biochemical & Serological Genetics (f) Human Populaton Genetics (g) Palaeoanthropology.

(2) Intensive field work experience.

Readership in Buddhist Studies

(a) Ability to teach Buddhist literary & Philosophical texts in M. Phil. Classes and guide research on the works of Buddhist Acharyas like Nagasona, Asvaghosa, Nagarjuna, Aryadeva, Dignaga, Asanga, Buddhaghosa, Dharmakirti and so on.

(b) Ability to teach M. Phil. classes and guide research in the field of Buddhist History, Archaeology, Epigraphy, Numismatics, etc.

(c) Consistently good academic record in Pali and Sanskrit (language and literature) and/or History and Archaeology

(d) Knowledge of classical Chinese and/or Tibetan languages.

Professorship & Readership in Sanskrit (South Campus)

Sahitya/Darshana/Epigraphy

Readership in Philosophy (South Campus)

Specialization in Indian Logic & Epistemology together with sound knowledge of original Sanskrit tests.

Co-ordinator

Administrative experience in a recognised institution teaching Degree classes or above.

Lectureships in Botany

Training and experience of Research in Inter-disciplinary areas.

Readership in Psychology

Any one of the following specializations :

(1) Clinical Psychology—with Diploma in Medical and Social Psychology (IM &SP)

(2) Industrial Psychology—with evidence of Research work in the field of Industrial Psychology.

Lectureship in Education

Post-graduate Degree in Education or Degree/Diploma in Education with some teaching experience in schools/training colleges.

Readerships in History

First Post :—Specialization in South Indian History and Culture. Candidate should have done doctoral research in any field of the history of peninsular India (preferable ancient or medieval) and should be proficient in atleast one of the South Indian languages.

Second post :—Specialization in British/European History : Candidate should have specialized in European or British history and have a doctorate in the internal or imperial aspects of the history of Europe or Britain. He should be capable of handling original sources in at least one European language other than English.

Third post :—Specialization in Ancient Indian History : Candidate should be proficient in interpreting literary as well as archaeological sources, and have a doctorate in any field of Ancient Indian History.

Fourth post :—Specialization in Russian and East European History : Candidate should have specialized in Russian and/or East European history with a doctorate in the same field. He must have a good knowledge of Russian and preferably one more European Language other than English.

Lectureship in Geology

Specialization in one or more of the following :

Photo Geology/Remote Sensing/Hydro-Geology/Mining Geology/Mineral Dressing/Mineral Fuels/Engineering Geology.

Lectureship in Oriya

(a) Knowledge of comparative literature and/or linguistics.

(b) Proficiency in English, Sanskrit and a Modern Indian language other than one's own mother tongue.

Lectureship in Punjabi

Training in Linguistisc and Stylistics.

Lectureship in Marathi

1. Ph.D. or a research degree.
2. Knowledge of Comparative literature.
3. Ability to teach in Hindi and English medium.

The prescribed application form can be had from the Information Section of the University either personally or by sending a self addressed envelope (size 13 cm x 28 cm.) with postage stamps worth **Rs. 2.85**.

The candidates will have to produce the original documents relating to their age, qualifications, experience, etc. at the time of interview.

Applications (separate for each post) accompanied by attested copies of Degrees, other certificates, marksheets, published research articles, etc., should reach the undersigned not later than **2nd July, 1980**.

Note

1. It will be open to the University to consider the names of suitable candidates for teaching posts who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases, in respect of all teaching posts on the recommendation of the Selection Committee.
2. Canvassing in any form by or on behalf of the candidates will disqualify.
3. Candidates from outside Delhi, for teaching posts only, called for interview will be paid to and fro single second class rail fare.
4. The University reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant.

REGISTRAR

SOUTH GUJARAT UNIVERSITY

UNIVERSITY CAMPUS,
UDHNA-MAGDALLA ROAD,
POST BOX NO. 49,
SURAT-395007

Applications are invited in the prescribed form (in eight copies) for the following teacning posts in the Post-Graduate Departments of the University :

Sr. No.	Name of the Department and the Number of Posts

(1) **LINGUISTICS**
One Reader
(i) Sound training and research of merit in Modern Theories of Grammar & Philosophy of Language with some experience of field studies;
(ii) Good command over Gujarati/Marathi.

(2) **ECONOMICS**
One Reader (Econometrics)

(3) **BIO-SCIENCES**
One Lecturer
Major specialisation in Animal Science (Zoology) with Research work in Invertebrate Zoology/Cell Biology/Embryology/Animal Physiology.

(4) **PHYSICS**
One Reader
Nuclear Physics/Particle Physics/(Theoretical)

(5) **CHEMISTRY**
One Reader
Theoretical Chemistry/Physical Organic/Physical/Solid State Chemistry.

(6) **BUSINESS AND INDUSTRIAL MANAGEMENT**
Two Professors
To be selected from following areas :
Marketing Management/Organisational Behaviour & Personnel Management/Quantitative Economics/Entrepreneurial Development/Co-operative Management.
One Reader
Marketing Management/Organisational Behaviour and Personnel Management/Entrepreneurial Development/Co-operative Management.

Four Lecturers
One in Organisational Behaviour and Personnel Management. One in Financial Management, One in Production Management and Quantitative Techniques and the fourth in Marketing Management.

(7) **RURAL STUDIES**
One Reader
A person with doctorate in Economics with specialised work in Rural Industries & Marketing/Rural Finance & Co-operation/

Rural Employment & Manpower Planning will be preferred.

(8) **ENGLISH**

One Lecturer

Pay Scale are as under :

(1) Professor : Rs. 1500-60-1800-100-2000-125/2-2500.

(2) Reader : Rs. 1200-50-1300-60-1600-Assessment-60-1900.

(3) Lecturer : Rs. 700-40-1100-50-1300-Assessment-50-1600.

In addition to pay the teachers of the University Departments are entitled to draw dearness allowance, House Rent Allowance and other benefit like contributory provident fund and gratuity as admissible from time to time.

Information about the qualifications and application form prescribed for each post can be had from the undersigned on payment of Rs. 7/- in cash or by Postal order alongwith self addressed envelope of 23 cm x 13 cm. size duly stamped with Rs. 0-50 ps.

The last date for receipt of the application will be **30-6-1980.**

G.A. Desai
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

Advt. No. Aca, III/4/80

Applications are invited for the 3 posts of Assistant Professors in the Centre for Political Studies, School of Social Sciences of the University, in the Scale of pay of Rs. 700-40-1100-50-1600 plus usual allowances as admissible to the members of the staff in the Central Universities.

Essential Qualifications (Common for all posts)

(a) Consistently good academic record with at least a high 2nd class Master's degree in Political Science or its equivalent qualification from an Indian/Foreign University: and

(b) A doctor's degree or published work of an equally high standard.

Areas of specialisation for each post :

Post No. 1. Political Theory and Thought.

Post No. 2. Government and Politics in India.

Post No. 3. Federalism or Comparative Politics.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very nigh standard, it may relax any of the qualifications prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed *provided he has done research work for at least two years or has practical experience in a research laboratory/organisation* on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centres of Studies

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per Univresity rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Proressor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications, (*separate for each post*) on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope (affixing Postage Stamps worth Rs. 2.85) of 23 cm x 10 cm size to the Deputy Registrar (Academic) Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by 30th June 1980.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth, merital status, nationality, state of domicile, postal and permanent addresses; father's name and address, academic and professional attainments, full details of (a) publications, and (b) research projects undertaken, language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

MAHARSHI DAYANAND UNIVERSITY

ROHTAK

Advertisement No. 4/80

Invited applications (through proper channel) for :

PROFESSORS IN: Economics, History and Law

READER IN: History

LECTURERS IN: Economics, History, Chemistry, Physics, Mathematics, Commerce, Business Management, Sociology, Journalism, Law and Sanskrit.

QUALIFICATIONS

(i) PROFESSORS: Very good academic record, Doctoral Degree, experience of guiding research, ten years' teaching experience of Post-graduate classes about 5 years' as Reader.

(ii) READER: Very good academic record, Doctoral Degree, at least 5 years' experience of teaching Post-graduate classes.

(iii) LECTURERS: Good academic record, Doctoral Degree or high standard research work. For Journalism: Good academic record, preferably M.A., in English or other Social Sciences degree/diploma in Journalism. Preference for experienced candidates. For Lecturers in Law : (a) Ph.D. or high second class LL.M. or any other foreign degree equivalent thereto. (b) A candidate having teaching experience may be preferred. For Lecturer in Sociology: Candidates with M.A. in Sociology will be preferred.

SPECIALISATION

Professor in Economics: Macro static Economics/Micro Economics.

Professor in History: Modern History.

Reader in History: Medieval Indian History.

Lecturers in Economics: Statistics/Macro-economics/Agricultural Economics/Micro-Economics.

Lecturer in History: Ancient Indan History.

Lecturers in Chemistry: One each in Inorganic/Organic/Physical Chemistry.

Lecturers in Physics: Electronics/Solid State Physics/Spectroscopy/Nuclear and Particle Physics.

Lecturer in Mathematics: Pure Mathematics.

Lecturer in Commerce: A candidate strong in Accounting will be preferred.

Lecturers in Business Management: Finance/Marketing / Personnel / Production.

Lecturers in Sanskrit: Vedic Studies/Sanskrit Grammar/Classical Sanskrit Literature.

NON-TEACHING POSTS

Programme Co-ordinator—NSS: Rs. 1100-50-1600.

QUALIFICATIONS

(i) A second Class Master Degree in Arts/Science/Commerce/Social Work (ii) At least three years' experience of social service work, preferably in National Service Scheme organisation.

PRESS MANAGER: 700-40-900/40-1100/50-1300.

At least Good Second Class Bachelor's degree with diploma in Printing Press Management from I.I.T or equivalent qualification and 10 years experience out of which 5 years as Press Manager in a Govt. Deptt./University/Semi-Govt. Organisation or in a private concern of repute.

MICRO-ANALYST : 400-40-800-0-950. At least high second class Master's Degree in Chemistry/Analyical Chemistry/Handling of Sophistiated Instruments or a First Class B.Sc. with ten years' experience as Micro-Analyst in Post-graduate Chemistry Department/Research institute.

ASSISTANT DIRECTOR OF PHYSICAL EDUCATION : 225-15-360/20-500.

QUALIFICATIONS: **Essential**

At least B.A. with D.P.Ed. from a recognised University. Desirable: Outstanding Sportsman preferably NIS trained or M.P.ED.

STORE INCHARGES: 120-5-145/7-180/12-300. B.Sc. with atleast two years experience of Store-keeping of a University level or equivalent thereof.

U.G.C. pay scales for all categories of teaching posts, with usual allowances and benefit of Contributory Provident Fund. Reservation for Ex-servicemen/B.C./S.C./S.T. candidates as pèr rules and no application fee from them.

Qualifications relaxable and higher start admissible in deserving cases. Knowledge of Hindi essential for all posts. Those who have already applied for posts of Micro-Analyst and Store-Incharge in response to earlier advertisement need not apply again.

Applications on plain paper with full bio-data, attested testimonials and crossed postal order(s) for Rs. 5/- for posts carrying basic pay of less than Rs. 300/- and Rs. 10/- for posts carrying higher basic pay, in favour of Chief Accounts Officer, payable at Post Office, Rohtak, be sent to Registrar by **30-6-1980**.

REGISTRAR

JADAVPUR UNIVERSITY
CALCUTTA—700032

Employment Notification No. A2/C/4/80

Dated, May 22, 1980.

Applications are invited in the prescribed form (priced Re. 1/-) per set of four copies and (Re. 1/- extra towards postal charges) for appointment to the following posts :

1. **Proof Reader**—One post.
Scale of pay : Rs. 400-15-430-20-530-25-655-30-865-35-900/-

Qualifications : Essential

H.S./P.U. with 3 years experience in proof reading in a reputable Press/Printing organisation.

Desirable

A degree in Arts/Science will be preferred.

2. **Junior Machineman**—Two posts.
Scale of pay : Rs. 400-15-430-20-530-25-655-30-865-35-900/-

Qualifications

(a) Read upto Class VIII.
(b) 7 years experience of working on press machines as skilled Helper

OR

I.T.I. Certificate or equivalent in the relevant line.

3. **Compounder**—One post
Scale of pay : Rs. 400-15-430-20-530-25-655-30-865-35-900/-.

Qualifications : Essential

School Final or equivalent. Certificate in Compoundership/Pharmacy or its equivalent with experience in the line.

4. **Nurse**—One post
Scale of pay : Rs. 540-25-625-30-805-35-910-45-1000/-

Qualifications

School Final or equivalent. Certificate in Nursing or its equivalent with 5 years experience in the line.

5. **Dark Room Processing Assistant** One post
Scale of pay : Rs. 400-15-430-20-530-25-655-30-865-35-900/-

Qualifications

School Final or equivalent Certificate in Photography with experience in the line of Dark Room Assistant.

6. **Junior Mechanic**—8 (eight) posts.
(Trades are ;
2 Electrician;
1 Civil Engineering Mechanic;
1 Tool Room Mechanic and Grinder;
1 Research Mechanic for Physics department;
1 Pattern Maker for Mechanical Engineering Workshop;
1 Electronic Mechanic for Electronics and Telecommunication Engg. Dept.
1 Fitter-Machinist for Mechanical Engineering Workshop).
Scale of pay : Rs. 400-15-430-20-530-25-655-30-865-35-900/-

Qualifications

Read upto Class VIII standard with 7 years experience as Skilled Helper in the relevant line or I.T.I. Certificate or equivalent in the relevant line.

In addition to the scales of pay mentioned above, candidates are entitled on appointment to usual admissible allowances current at this University.

N.B. : Of the total posts as mentioned above the following posts are reserved for Scheduled Casets/Scheduled Tribes candidates subject to availability of qualified candidates.

Junior Mechanic—4 (SC)
Junior Machineman—1 (ST)

Last date of receiving the applications is **28th June, 1980.**

Application forms are obtainable from the University Office during working hours. No travelling allowance is admissible to candidates called for interview. Higher initial salary may be given to really deserving candidates. Those who are in employment should submit their application through proper channel. Choice of the Appointment Board will not necessarily be confined to applicants only. Canvassing in any form will disqualify a candidate.

REGISTRAR

PUNJABI UNIVERSITY
PATIALA

Advertisement No. 16/SPS/PRO/Estt./80

Applications are invited for the following posts :

1. **LECTURERS** (One each in Geography and Persian)
(Grade Rs. 700-40-1100-50-1600)

Qualifications

(a) A Doctor's degree or research work of an equally high standard in the relevant subject, and,
(b) Consistently good academic record with Ist or high second class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.
(c) Qualifications prescribed in (b) above are relaxable in case the research work of a candidate as evident either from his thesis or from his published work is of a very high standard. If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research Laboratory/organization on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

SPECIALIZATION

Lecturer in Geography : Specialization in any branch other than population and agricultural geography. Other things being equal preference will be given to those who can handle courses in physical geography or political geography/geographical thought and methodology.

Lecturer in Persian : (i) History of Persian Literature. (ii) History of Ancient Persia.

Preference will be given to the candidate possessing efficiency in teaching through Punjabi medium.

2. **LECTURER IN RUSSIAN**
(Grade Rs. 700-40-1100-50-1600)

Qualifications

(a) and (b)—same as in post 1 above.
(c) Qualifications prescribed in (b) above are relaxable in case the research work of a candidate as evident either from his thesis or from his published work is of very high standard. If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing consistently good academic record may be appointed provided he has done one year post M.A. diploma course in the teaching of foreign language concerned from a University on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he

will not be able to earn future increments until he fulfils these requirements.

3. **RESEARCH ASSISTANT** (Nuclear Science Laboratories)
(Grade Rs. 550-20-650-25-750)

Qualifications

Atleast M. Phil. with first rate academic record. Familiarity with vacuum techniques and data analysis is desirable. Selected candidates will be required to assist in the projects on elemental analysis using nuclear techniques.

4. **JUNIOR RESEARCH FELLOWS**: (U.G.C.)
(One each in Human Biology, Economics, History and Education)
(Rs. 400/- p.m. all inclusive)

Qualifications

Junior Fellowship is open to persons preferably below the age of 30 years, who have obtained a Master's degree of a recognised University in the first or high second division (with atleast 55 % marks or B in the seven point grade system).

5. **RESEARCH SCHOLARS IN BOTANY—2**
(For project entitled "Cytogenetics of Indian Forest Trees")

Qualifications

Atleast Ist class MSc. Botany. Those with specialization/research experience in Cytogenetics will be preferred. Candidates with two years experience in Cytogenetics may be given Rs. 500/- p.m.

GENERAL

Higher start within the grade admissible, depending upon the ability and experience of the candidate. House rent and Dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respects on the prescribed form accompanied by a crossed Postal Order worth Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Caste/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala should reach the University by **30-6-80**. The forms can be had from the Production & Sales Officer, Publication Bureau, Punjabi University, Patiala on payment of Re. 1/- by sending a crossed Postal Order drawn in favour of the Registrar, Punjabi University, Patiala, alongwith a self addressed envelope of the size of 25 x 10 cms. stamped with 30 paise postage which should be superscribed at the TOP in BOLD letters "REQUEST FOR APPLICATION FORM, FOR THE POST OF ————

Persons already in service should apply through proper channel. Government servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by **2-7-80**.

REGISTRAR

BIDHAN CHANDRA KRISHI VISHWAVIDYALAYA

P.O. MOHANPUR, WEST BENGAL

Advertisement No, APPTT/4/80

Applications are invited in prescribed forms for the following posts in the scales mentioned below plus other allowances as admissible under the rules of the Viswa Vidyalaya :

A. **Lecturer in Agriculture Chemistry & Soil Science**—(One post) in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Agricultural Chemistry & Soil Science with specialisation in Soil Science or equivalent degree of a foreign University, (ii) A Doctoral Degree in Soil Science & Agricultural Chemistry, preferably in the field of Soil Physics or Physical Chemistry of Soils or published research work of an equally high standard;

Desirable

Teaching or research experience in basic Physical Chemistry/Physical Chemistry of Soils/Soil Physics;

Age

Below 45 years

Those who have applied in response to advt. No. APPTT/5/79 need not apply. Their cases will be considered.

B. **Lecturer in Agricultural Engineering**—(One post) in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Agricultural Engineering with specialisation in Soil and Water Conservation Engineering in M. Tech. or equivalent degree of a foreign University, (ii) A Doctoral Degree in the Subject or published research work of an equally high standard;

Age

Below 45 years.

C. **Lecturer in Horticulture**—(3 Posts against lien vacancies-likely to continue indefinitely) in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Horticulture following a Degree in Agriculture or equivalent degree of a foreign University, (ii) Doctoral Degree in Horticulture or published research work of an equally high standard.

Age

Below 45 years.

D. **Lecturer in Plant Pathology**—(One post against a lien vacancy) in the scale of Rs 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Plant Pathology or equivalent degree of a foreign University, (ii) A Doctoral Degree in the subject or published research work of an equally high standard;

Age

Below 45 years.

E. **Research Scientist III**—(2 temporary posts under AIC Potato Improvement Project) in the scale of Rs. 700-40-1100-50-1600/- (One post for Genetics & Plant Breeding and the other for Entomology)

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Genetics & Plant Breeding/Entomology or equivalent degree of a foreign University; (ii) A Doctoral Degree in Genetics & Plant Breeding/Entomology or published research work of an equally high standard;

Age

Below 45 years.

*The posts of Research Assistants have since been designated as Research Scientist III, the candidates who applied for the post of Research Assistant under this category in response to our advertisement No. APPTT/2/79 need not apply again. Their cases will be considered.

F. **Research Scientist III**—(1 temporary post under AICP on Floriculture in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Horticulture, following a degree in Agriculture or equivalent degree of a foreign University, (ii) A Doctoral Degree in the subject or published research work of an equally high standard;

Age

Below 45 years.

The posts of Research Assistants have since been designated as Research Scientist III, the candidates who applied for the post of Research Assistants under item J. of Advt. No. APPTT/5/79 need not apply. Their cases will be considered.

G. **Research Scientist III**—(2 temporary posts under AICP on Coconut & Arecanut) in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Horticulture, following a degree in Agriculture or equivalent degree of a foreign University, (ii) A Doctoral Degree in Horticulture or published research work of an equally high standard;

Age

Below 45 years.

* The posts of Research Assistants have since been designated as Research Scientist III, the candidates who applied for the post of Research Assistant under this Scheme as per advertisement No. APPTT/1/79 need not apply. Their cases will be considered.

H. **Lecturer in Genetics & Plant Breeding**—(One post against a lien vacancy) in the scale of Rs. 700 40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Genetics & Plant Breeding or equivalent degree of a foreign University, (ii) A Doctoral Degree in the subject or published research work of an equally high standard;

Desirable

Specialisation in Plant Physiology;

Age

Below 45 years.

I. **Research Officer**—(One post temporary under Scheme for Hill Development Project in the District Darjeeling conducted by the Department of Horticulture) & Rs. 1000/- per month (consoidated).

Qualification : Essential

A first or high second class Master's Degree in Horticulture following a degree in Agriculture & experience in research on Horticultural Crop for a period of at least three years.

Age :

Below 45 years.

J. **Assistant Comptroller**—(3 posts) in the scale of Rs 700-40-1100-50-1600/-

Qualification : Essential

(i) Uniformly good academic record with a (B+) Master's Degree or its equivalent; (ii) At least five years' experience involving supervision, control, planning and management of accounts and audit

OR

Preparation of budget in a Government/Quasi-Government organisation or University/Institute of Higher learning

(iii) Age not below 30 years. Relaxable in case of exceptionally qualified candidates.

Desirable

Membership of Institute of Cost and Chartered Accounts of India or a degree or diploma from a recognised Institute of Management or passes SAS Examination. The requirement of Master's Degree will be waived in the case of candidates with good academic record and at least 10 years' working experience in Senior position in any of the Universities or Institute of Higher learning involving budgeting and maintenance of Accounts and Audit.

K. **Jr. Dairy Technologist**—(One post temporary) in the scale of Rs. 600-35-670-40-870-45-1050-50-1250/-

Qualification : Essential

(i) A Degree in B.Sc. in Dairy Technology, (ii) Two years' experience of teaching or plant work;

Age

Below 30 years.

N.B.

(i) Preference will be given to the candidates having basic degree in Agriculture i.e. B.Sc (Ag.) for the post under category 'A', 'B', 'D', 'E' & 'H'

(ii) For category 'A' to 'H'—if a candidate possessing Doctorate Degree or equivalent research work is not available or is not considered suitable, the person possessing consistently good academic record may be considered for appointment, on the condition that, he/she will have to attain a Doctorate Degree or show evidence of research work of equivalent high standard within five years of his/her appointment failing which he/she will not be eligible to earn increments till he/she fulfils these requirements.

Experience and age limit may be relaxable on the recommendations of the Selection Committee in the case of candidates otherwise qualified. A high initial pay in the scale may be granted on the basis of qualifications, experiences and present emoluments.

Applications must be submitted in the prescribed forms obtainable from the office of the Registrar, Bidhan Chandra Krishi Viswa Vidyalaya, P.O. Mohanpur, Dist. Nadia, West Bengal by remitting crossed Indian Postal Order for Rs. 8.00 (eight) for the categories 'A' to 'J' and Rs. 3.00 (three) for category 'K' in favour of the 'Bidhan Chandra Krishi Viswa Vidyalaya' between 11-30 A.M. & 4-00 P.M. on week days and between 11-30 A.M. & 1-00 P.M. on Saturdays.

Application forms may also be obtained by post by sending a self addressed envelope stamped Re. 0.45 (forty five paise) only and the necessary **Postal Order**.

Persons already in employment should apply through proper channel.

Applications completed in all respects should be submitted to the office of the undersigned by the **30th June, 1980** in an envelope superscribed with the name of the post applied for.

Candidates called for interview will have to appear at their own cost.

A. K. Mitra
REGISTRAR (Actg.)

UNIVERSITY OF BOMBAY
BOMBAY 400032

Centre of Post-graduate Instruction and Research, Panaji, Goa

Applications are invited in the prescribed form for the following *temporary* posts in the Centre of Post-graduate Instruction and Research, Panaji, Goa:

1. Professor of English
2. Professor of History
3. Professor of Economics
4. Reader in Marathi
5. Reader in Portuguese
6. Reader in French
7. Reader in Modern History
8. Reader in Economics
9. Reader in Economics
10. Reader in Sociology
11. Reader in Mathematics
12. Reader in Mathematics
13. Reader in Physics
14. Reader in Physics
15. Reader in Chemistry
16. Reader in Marine Science
17. Lecturer in Marine Science
18. Lecturer in Economics
19. Lecturer in Philosophy
20. Lecturer in Chemistry

The pay-scales of the posts are :

Professor—Rs. 1500-60-1800-100-2000-125/2-2500;
Reader— Rs. 1200-50-1300-60-1900 and
Lecturer— Rs. 700-40-1100-50-1600.

In addition to pay, Dearness Allowance, House Rent Allowance and Compensatory Local Allowance will be paid according to the University rules. All posts carry the benefits of Provident Fund and Gratuity according to the University rules. A higher starting pay may be given to persons appointed to the posts of Professor and Reader in special cases. Other things being equal, preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requiremnts regarding qualifications, experience etc. laid down for the posts; povided however, that if no candidate is available from scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified persons from among the other candidates.

The minimum qualifications prescribed for the posts are as under :

Professor

An eminent scholar with published work of high quality, actively engaged in research. Ten year's experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader

Good academic record with a Doctor's degree or equivalent published work, Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer

(a) A Doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with Ist or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

Explanation

(1) For determining consistently good academic record, a candidate should either have an average of 55% marks at the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% marks at each of the two examinations separately.

(2) For determining high second class, the mid-point between the minimum percentage of marks fixed by a University for award of second class and first class may be taken.

The additional qualifications prescribed for the posts are as under

1. **Professor of English**—Must have specialisation in the study of English Language and study of American Literature or Commonwealth Literature. Published work of recognized merit in this area of specialisation.

2. **Professor of History**—Must have specialised in the study of history of the Portuguese power in India or must have done research of recognized merit in the colonial history of the Portuguese in Asia, Africa and Latin America. Knowledge of Portuguese and Marathi including modi script.

3. **Professor of Economics**—Must have done independent research work of recognized merit and have considerable experience in guiding and conducting research work. Must have specialization in Development Economics.

4. **Reader in Marathi**—Must have specialisation in Literary criticism, familiarity with modern trends in English Literature and criticism. Evidence of published research work of recognized merit in this field of specialisation. Experience of teaching post-graduate classes and guiding research.

5. **Reader in Portuguese**—Must have a wide background and general competence in his respective field of specialisation, evidence of three years of post-doctoral research and experience of teaching post-graduate classes.

6. **Reader in French**—Must have experience of teaching postgraduate classes and of guiding and conducting research work.

7. **Reader in Modern History**—Must have specialization in erstwhile Portuguese Colonies in Asia and Africa and must have experience of teaching post-graduate classes for at least 10 years and guiding and conducting research work in Modern History and must have done independent research work of recognized merit.

8. **Reader in Economics**—Must have done independent research work of recognized merit and experience of teaching post-graduate classes and of guiding and conducting research work. Must have specialization in Statistics/Econometrics.

9. **Reader in Economics**—Must have specialisation in Industrial/Agricultural Economics. Preference will be given to specialization in Industrial Economics. Must have considerable experience of teaching post-graduate classes or evidence of three years of post-doctoral research.

10. **Reader in Sociology**—Must have done independent research work of recognised merit and must have experience of teaching post-graduate classes and of guiding and conducting research work. Must have specialization in Social Change.

11. **Reader in Mathematics**—Must have specialization in Applied Mathematics, Fluid Mechanics, Control and Optimization Theory and considerable experience of teaching post-graduate classes or evidence of three years of post-doctoral research of high quality.

12. **Reader in Mathematics**—Must have specialization in Mathematical Analysis or Theory of Differential Equations or Functional Analysis or Algebra. Must have considerable experience of teaching post-graduate classes or evidence of three years of post-doctoral research.

13. **Reader in Physics**—Must have to their credit independent research work of recognised merit in the area of Nuclear Magnetic Resonance Studies and must possess experience of teaching post-graduate classes and guiding advanced research.

14. **Reader in Physics**—Must have specialisation in Electronic Instruments and considerable experience of teaching post-graduate classes or evidence of three years of post-doctoral research.

15. **Reader in Chemistry**—Must have specialization in Physical Chemistry and particularly in Chemical Physics or Chemical Instrumentation or Polymers or Spectroscopy or Kinetics. Must have experience of teaching post-graduate classes and guiding and conducting research.

16. **Reader in Marine Science**—Must have a wide background and general competence in any area of Marine Biological Sciences and must have done independent research work of recognised merit. Must possess considerable experience of teaching post-graduate classes and of guiding and conducting research work.

17. **Lecturer in Marine Science**—Must have specialisation in Marine Chemistry. Experience of teaching post-graduate classes and of guiding and conducting research work will be preferred.

18. **Lecturer in Economics**—Must have done independent research work of recognized merit. Experience of teaching post-graduate classes and of guiding and conducting research work. Must have specialization in Regional Planning.

19. **Lecturer in Philosophy**—Must have specialisation in Symbolic Logic and experience of teaching post-graduate classes or guiding and conducting research.

20. **Lecturer in Chemistry**—Must have specialization in Physical/Inorganic Chemistry and experience of teaching post-graduate classes and of guiding and conducting research work.

Eight copies of the application, in the prescribed form, should be sent in an envelope superscribed with "Application for the temporary post of ....'' so as to reach the Registrar (Teaching Appointments Unit), University of Bombay, Bombay-400032, **on or before Monday, 7th July, 1980.** Candidates from abroad, Andaman & Nicobar Islands and Lakshadweep may send their applications so as to reach the Registrar **on or before Monday, 21st July, 1980. Applications received after the last date will not be considered.**

Prescribed forms of application can be had in person, free of charge, from the Teaching Appointments Unit, Registrar's Office, (RoomNo. 110), University of Bombay, Fort, Bombay-400032. Requests for supply of a set of eight prescribed forms by post should be made sufficiently in advance with a self-addressed stamped (Rs. 1.80) envelope of the size of 27 x 12 cms.

Candidates should send with every application a crossed Indian Postal Order or a crossed Demand Draft on a scheduled bank for Rs. 10/- drawn in favour of the Registrar, University of Bombay, payable at Bombay, as application fee. Candidates who apply for more than one post should send separate applications along with the requisite fee by means of a crossed Indian Postal Order/Demand Draft. Money orders or cheques or cash will not be accepted by the University. The fee will not be refunded once an application has been received by the University.

Incomplete applications and applications without the requisite fee will not be considered. Applications on plain paper will not be considered.

Candidates are advised to satisfy themselves before applying that they possess the prescribed qualifications and it is for the candidates themselves to ensure that they possess the prescribed qualifications. No inquiry asking for advice as to eligibility will be entertained.

Candidates called for interview will have to present themselves at their onw expenses. Canvassing, direct or indirect, will be a disqualification.

NOTE: **Persons who had applied for the above mentioned posts in response to the previous advertisements dated 10th June, 1977 and 23rd August, 1978 should apply afresh if they are interested in the posts.**

G.M. Rajarshi
REGISTRAR

AWADHESH PRATAP SINGH UNIVERSITY

REWA (M.P.)

Advertisement No. Estt./18/80/1041-1042
Dated : 29-5-80

Applications in the prescribed form are invited for the following posts so as to reach the Registrar A P.S. University, Rewa on or before **29 June 80**. Each application shall be accompanied by a crossed Indian Postal Order for Rs. 10/- (Rupees ten only) payable to the Registrar A.P.S. University, Rewa.

Department—Environmental Biology
Reader—One
Lecturer—One

Scale of Pay
Reader : 1100-50-1600.
Lecturer : 620-40-900-50-1400.

Qualifications

(A) The candidates for all the above posts should possess a 1st or 2nd class Master's Degree of an Indian University or an equivalent qualification of a Foreign University in the subject concerned with at least 50 % (B in the seven point scale) in the subject concern and a Doctorate Degree.

(B) At least 50% marks at the Higher Secondary/Intermediate/Pre-University Examinations as the case may be.

(C) At least 50% marks in the Bachelor's Degree Examination on the basis of which division is awarded at the degree level by the University and,

Provided that the candidates for the appointment to the post have an average of 55% of the two examinations prior to Master s degree (Irrespective of the marks obtained in any of the two examinations, or 50% in marks in each of the two examinations separately).

N.B. The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of Schedule caste/Schedule tribe candidates.

(D) Teaching experience of 5 years and 3 years experience of guiding research is essential for the post of Reader.

(i) Knowledge of Hindi shall be a desirable qualification for the above posts.

(ii) Experience of teaching Degree/Postgraduate classes will be desirable qualification for the post of Lecturer.

Provided that if the Selection Committee is of the view that present work of a candidate evident either from his thesis or from his published research work is of very high standard it may relax any of the qualification prescribed in B & D above.

Specialization :

For the post of Lecturer

M.Sc. Microbiology/Environmental Biology/Botany/Zoology/Bioscience, Ph.D.

Specialization : Microbiology.

For the post of Reader

M.Sc.—Environmental Biology/Bio Science/Botany/Zoology/Bio-Physics. Ph.D.

Specialization :

Endocrinology/Cell Biology & Developmental Biology/Bio-Physics/Cytogenetic/Limnology.

2. The above pay scales are carrying with them dearness allowance and the benefit & contributory Provident fund and other allowances in accordance with the rules of the University.
3. Applications should be made on the prescribed form obtained from the University office on payment of Rs. 5/- (Five only) in the shape of a crossed Indian Postal Order payable to the Registrar, APS University, Rewa. Applications must be supported with the marksheets of the qualifying examinations.
4. Candidates already in service should apply through proper channel.
5. Candidates selected for interview will be requested to travel at their own expenses.
6. The University reserves the right to fill up or not to fill up the posts advertised and or to call only selected candidates for interview.
7. 16% seats are reserved for schedule caste/20% Schedule tribe/3% Handicapped candidates. But if no candidates is found suitable the posts will be filled up from amongst general category.

Note : Previous advertisement No. Dev. 50/79/2755-2939 Dt 9-8-79 & No Dev /80/6363-6406 Dt. 7-1-80 regarding the above posts are hereby cancelled.

REGISTRAR

MAHARSHI DAYANAND UNIVERSITY ROHTAK

Entrance Scholarship—1980

Maharshi Dayanand University, Rohtak, will award 140 scholarships with effect from the academic session 1980-81 on the basis of a competitive examination to be held on 13th July, 1980.

Out of these, 90 scholarships of the value of Rs 100/- p.m. each tenable for three years will be available for the students joining University's Three Year's Honours' Course in the subjects of English, Hindi, Sanskrit, Economics, History, Political Science, Chemistry, Physics, Mathematics and Commerce. The balance 50 scholarships of the value of Rs 200/- p.m. each will be available for the students joining Two Years' Postgraduate course in English, Hindi, Sanskrit, Economics, Political Science, Business Management, Commerce, History, Physics. Chemistry, Mathematics & Sociology. These scholarships will be tenable for two years.

Though tenable for three years for those joining Three Years' Honours' Course and for two years for those joining post-graduate course in the above mentioned subjects, continuance of scholarships from year to year will be dependent on annual performance of scholarship holders.

The condition of eligibility to appear in the Entrance Scholarships Examination will be (i) Haryana domicile and (ii) atleast 60% marks in Pre-University or equivalent examinations for those joining Three Years' Honours' Course and the same percentage of marks in B.A./B.Sc./B Com. or equivalent examinations for those joining a post-graduate course.

Application forms and brochure containing detailed information including syllabus for this examination can be had from the Assistant Registrar (Regn. & Sch.), Maharshi Dayanand University, Rohtak-124001 by sending a self-addressed envelope affixed with 0.50p. stamps. The last date for the submission of forms is **30th June**.

REGISTRAR

NORTH EASTERN HILL UNIVERSITY
SHILLONG—1

No. Advt./P-5/80 **Dated : 21-5-1980.**

Applications are invited for the following posts in the two constituent Colleges of the University.

Sl. No.		No. of Vacancy	Scale of Pay
1.	Associate Professor/Reader in Agronomy	1	Rs. 1200-50-1500-60-1900/-
2.	Associate Professor/Reader in Agriculture Botany.	1	-do-
3.	Associate Professor/Reader in Agri. Zoology & Entomology.	1	-do-
4.	Associate Professor/Reader in Horticulture	1	-do-
5.	Associate Professor/Reader in Extension	1	-do-
6.	Associate Professor/Reader in Agri. Chemistry & Soil Science.	1	-do-
7.	Associate Professor/Reader in Economics	1	-do-
8.	Associate Professor/Reader in Animal Husbandry	1	-do-
9	Associate Professor/Reader in Agril. Engineering	1	-do-
10.	Assistant Professor/Lecturer in Plant Pathology	1	Rs.700-40-1100-50-1600/-
11.	Assistant Professor/Lecturer in Horticulture	1	-do-
12.	Assistant Professor/Lecturer in Agril. Zoology & Entomology	1	-do-
13.	Assistant Professor/Lecturer in Extension.	1	-do-
14.	Assistant Professor/Lecturer in Chemistry & Soil Science	1	-do-
15.	Assistant Professor/Lecturer in Economics	1	-do-
16.	Assistant Professor/Lecturer in Animal Husbandry	1	-do-
17.	Assistant Professor/Lecturer in Agril Engineering	1	-do-
18.	Lecturer in Economics	2	-do-
19.	Lecturer in Mathematics	1	-do-
20.	Lecturer in Chemistry	1	-do-
21.	Lecturer in Philosophy	1	-do-

Sl. No. 1 to 17 are for College of Agriculture, Medziphema, Nagaland and Sl. No. 18 to 21 are for Pachhunga University College, Aizawl, Mizoram.

Essential Qualifications

Sl. 1 to 9

(a) Good academic record with a doctoral degree or equivalent published work.

(b Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

(c) Ability to interact with other disciplines.

(d) About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer, or in an equivalent position. This condition may be relaxed in the case of candidates having outstanding research work.

Sl. 10 to 21.

(a) A doctoral's degree or research work of a high standard, and

(b) Consistently good academic record with 1st or high 2nd Class ('B' in the seven point scale) Master's degree in a relevant subject or equivalent degree of a foreign University. Having regard to the need for developing interdisciplinary programmes, the degree in(a) above may be in relevant subjects.

Desirable

Sl. No. 1 : Experience in Agril. Metereology/Climatology.
Sl. No. 2 : Experience in paddy/maize/sugar-cane research.
Sl. No. 3 : Experience in pests of field/horticulture crops.
Sl. No. 4 : Experience in vegetable/plantation/fruit crops.
Sl. No. 5 : Experience of working in rural areas.
Sl. No. 6 : Experience in soil & plant analysis in relation to Agri. fertility evaluation.
Sl. No. 7 : Knowledge in rural banking.
Sl. No. 8 : Experience in animal nutrition/animal breeding/live-stock production and management.
Sl. No. 9 : Experience in soil water Engg. / management / farm machinery.

Candidates appointed should be prepared to serve anywhere within the jurisdiction of the North-Eastern Hill University, although presently they will be posted at Medziphema, District Kohima, Nagaland and Aizawl, Mizoram as specified in the advertisement.

Applications on plain paper indicating name, present address, age, qualifications in detail, etc. etc., should reach the undersigned on or before **30th June, 1980** together with an Indian Postal Order for Rs. 5 (Rs. 2.50 in case of Scheduled Caste/Scheduled Tribe candidates) payable to the "North Eastern Hill University", Shillong as application fee.

NOTE

1. Persons in service should submit their application through their employers.
2. Candidates called for interview will have to appear before the Selection Committee at the office of the North-Eastern Hill University or at any place specified. A return second class railway fare will be paid by the University.
3. All appointments will be subject to a period of probation.
4. These posts are open to all citizens of India who satisfy the required qualifications but some preference may be given to equally qualified Scheduled Caste/Scheduled Tribe candidates.
5. The University reserves the right to make appointment under statute 21 of the Act, if necessary.

Mrs. M.R. Mawlong
REGISTRAR

UTKAL UNIVERSITY
Vani Vihar, Bhubaneswar-4

Advt. No. Estt.1/886-C/10752/80,
Dated 7-6-1980

Wanted five Lecturers in Law (Whole-time), one Part-time Lecturer in Taxation Law, thirteen Part-time Lecturers in Law and one Lecturer in Mathematical Economist for the Utkal University in the U.G.C. Scales of pay, possessing the U.G.C. and University prescribed qualifications. Last date of application is the **30th June, 1980**. Candidates who have applied earlier in complete form in response to the advertisement No. Estt.1 886-C/17699/79, dated 24-8-79 and No. Estt. 1/886-C/32682/79, dated 18-12-79 need not apply again.

Prescribed application forms and other details for the various posts can be had from the Registrar of the University in person on payment of Rs. 7.49 paise only or by post on receipt of a crossed Indian Postal Order for Rs. 9/- (Rupees nine) only payable to the Registrar, Utkal University, Vani Vihar, Bhubaneswar-4.

REGISTRAR

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University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JULY 1, 1980

Prof. W. M. Kalmegh, Vice-Chancellor of Nagpur University, honouring V. Shantaram with the degree of D. Litt. at the 69th convocation of the University in Nagpur.

CLASSIFIED ADVERTISEMENTS

MADURAI KAMARAJ UNIVERSITY

Notification No. 3/V/Advt./80

Applications in the prescribed form are invited for the following posts in the University:

School of Biological Sciences

1. One Reader in Environmental Biology
2. One Lecturer in Plant Cell and Tissue Culture
3. One Lecturer in Plant Ecology
4. One Lecturer in Animal Behaviour

School of Tamil Studies & Indian Languages

5. One Professor of Journalism

School of Mathematics

6. One Professor of Statistics

School of Social Sciences

7. One Reader in Econometrics

Essential General Qualification

Professor

A first or high second class Master's Degree and a Ph.D. degree in the relevant subject with not less than 10 years of teaching (P.G. courses) and/or research experience including guiding research at doctoral level of which atleast 3 years must be of a Reader or a position equivalent thereto.

Reader

A first or high second class Master's Degree and a Ph.D. degree in the relevant subject with not less than 5 years of teaching (P.G. courses) and/or research experience of which atleast 3 years must be of a Lecturer or a position equivalent thereto.

Lecturer

Consistently good academic record with a first or high second class Master's degree and a Ph.D. degree in the relevant subject with not less than 3 years of teaching experience at P.G. level.

PREFERENCE WOULD BE GIVEN TO SC/ST CANDIDATES WHO ARE CONSIDERED FIT IN RESPECT OF LECTURERS.

The prescribed form of application and full details regarding qualifications and experience required can be got from the undersigned on requisition quoting the number of the notification accompanied by (a) self addressed envelope with postage stamps to the value of Re. 1/- affixed thereon and (b) State Bank of India Challan for Rs. 5/- (Madurai Kamaraj University Account No. 1) or Demand Draft for Rs. 5/- payable at Madurai drawn in favour of the REGISTRAR, MADURAI KAMARAJ UNIVERSITY, MADURAI-625021.

The last date for receipt of filled in applications is **15-7-1980.** Applications received after the prescribed date will not be considered.

Note : Those who have responded to this office earlier advertisement Notification No. 1/V/Advt./80 need not apply again for the posts of Professor of Journalism, Statistics and Reader in Econometrics.

B. Murugan
REGISTRAR

OSMANIA UNIVERSITY
HYDERABAD-500007

Advertisement No. 8/80

Applications in the prescribed form together with the registration fee of Rs. 5/- through M.O./I.P.O./Challan 'A' are invited for the following posts in the University service, so as to reach the undersigned on or before **18th July, 1980**.

1. **Instrumentation Engineer**—Rs. 1500-50-1800-100-2000-125-2500.
2. **Lecturers in Hindi**—Rs. 700-40-1100-50-1600.

Age

Post No. 1—Not above (50) years.
Post No. 2—Not above (35) years.

Note

(i) Age limit does not apply to the employees of this University.
(ii) Age relaxation can be considered in deserving cases.

14%, 4% and 25% reservations are made for SCs, STs and BCs respectively, in case of Lecturer's post only.

Application forms can be had from the Director, Dept. of Publications and University Press, Osmania University, Hyderabad-7, A.P. on payment of Rs. 4.50 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self-addressed envelope (11½ x 26½ cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be fixed on the application form. No original certificates should be enclosed to the application form.

Full particulars can be obtained on requisition from the Director, Osmania University Press, free of cost, by sending a self-addressed stamped envelope.

B. Ramachandra Reddy
REGISTRAR

UTKAL UNIVERSITY

ADVERTISEMENT
E. Estt. II(644)/10323/80
Dated 21-6-80

Wanted a Research Officer in the scale of pay Rs. 700-1600/- with the minimum qualification of high second Class M.A. degree in Economics/Analytical and Applied Economics under the Institutional Finance Scheme of the University sponsored by the Reserve Bank of India. Preference will be given to a candidate who has specialisation in Institutional Finance and published some research work of high standard in the field of specialisation. Last date for receipt of application is **21st July, 1980**. This is an ex-cadre post.

Five copies of application forms will be supplied to the candidates from the office of the undersigned in person on payment of Rs 5.35 paise or by post on receipt of a crossed Indian Postal Order for Rs. 7.85 paise payable to the Finance Officer, Utkal University, Vani, Vihar, Bhubaneswar-4. No money order will be entertained for the purpose. Applications should be accompanied by attested copies of certificates, diplomas and testimonials etc.

P.K. Satpathy
REGISTRAR

WANTED

Associate Professor/Associate Research Scientist in the pay-scale of Rs. 1200-1900 by the Gujarat Agricultural University in the following disciplines :

Agriculture Faculty

- Agronomy
- Plant Breeding
- Plant Physiology
- Plant Pathology
- Agricultural Chemistry and Soil Science
- Bio-Chemistry
- Agricultural Statistics
- Horticulture
- Agril-Extension
- Microbiology

Dairy Science & Animal Husbandry

- Dairy Engineering
- Dairy Technology
- Dairy Microbiology
- Animal Science
- Animal Husbandry
- Animal Breeding
- Animal Genetics

Application forms and other details can be had from the **Registrar, Gujarat Agricultural University, Sardar Krushinagar** 385 506 (Dantiwda), Dist: Banaskantha on cash payment of Rs. 2/- or by sending crossed Indian Postal Order of equal amount issued in favour of Chief Accounts Officer, Gujarat Agricultural University Sardar Krushinagar, alongwith the self-addressed envelope (23 cms x 11 cms) affixed with 50 paise postage stamps.

The candidates already in the service of this University may apply through their respective officers on plain paper with six copies of their bio-data. All candidates called for interview will have to attend the same at their own cost.

Last date for receiving the application form completed in all respect is **31.7.80.**

UNIVERSITY
NEWS

Vol. XVIII JULY 1
No. 13 1980

A Fortnightly Chronicle of Higher Education
Price 80 Paise

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Science, Technology and Growth

M. N. Dastur

Today, the basic issues confronting both the developed and the developing countries are the uncertainties about the adequate availability of food and energy to meet the requirements of the growing world population and the urgent need to ensure a clean and healthy environment. There is now a new awareness about the 'social dimensions' of science and technology as well as the interdependence of technology, economic growth and social justice. The purely economic approach to growth measured in terms of gross national product (GNP) has given place to a multi-dimensional developmental approach specifically oriented towards the satisfaction of basic human needs, social justice and environmental harmony—the new growth indicators now known as the 'quality of life' index.

Technology is one of society's main sources of innovation and progress ; and if it is to be an effective instrument of development and change, it should be specifically directed to perform its appointed tasks and to achieve the socio-economic goals. However, this will not take place automatically. The two essential elements are the political will to utilise technology and the socio-economic environment for its development.

While it is generally accepted that there are physical limits to growth in the vety long-term context of the depletion of natural resources, progressive environmental degradation and rapidly expanding population, we need not be unduly pessimistic or alarmed about it. Science and technology keep opening new frontiers for mankind, enabling it to overcome the various constraints to growth.

In fact, science and technology represent an unlimited resources of human ingenuity to find viable solutions to a complexity of problems. They are instrumental in expanding the limits of man's resources. This expansion of limits is not just confined to minerals : it extends to food, goods and services ; transport and communications; and human habitation and environmental improvement. Even as technology has enabled the extensive development and efficient use of conventional resources from the biosphere to meet the human requirements, it can be reasonably expected to devise methods for the extraction and conversion of hitherto unexploited and unknown materials into new resources for bettering man's condition.

The 'limits to growth' philosophy is based on the assumption that the limited available natural resources and ecology impose a near-term time limit to our ability to continue obtaining materials from the earth to sustain the food and other requirements of the growing population; and also to safely manage and dispose of the hazardous wastes of growing industries. Science/technology has pushed back and diffused these limits to growth.

The advanced countries need to be more concerned with abating their environmental pollution and in reducing the socio-economic stresses induced by their system. In the case of developing countries, however, the most pressing needs are the provision of the basic necessities of life for the masses and rapid economic progress through the development of national resources with the increased application of science and technology, to sustain the expanding population and to bring about a more equitable distribution of the national product.

Our problems of growth for the future should be viewed in this perspective. The growth situation is not all that alarming, judging from the conclusions of the recent Interfutures research study entitled 'Facing the Future' sponsored by the Organisation for Economic Cooperation and Development (OECD). The report concludes that the growth of the countries of the world taken as a whole can continue during the next half-century without encountering long-term physical limits. However, the study cautions that in all probability, all countries will experience a difficult and long period of transition in their relations with the ecosphere. This transitional phase will be marked by problems occasioned by constraints on physical availability of materials closely linked with economic and social constraints as well as socio-political challenges. Thus, the transition to stable populations may not be achieved solely by family planning techniques, but will demand a more fundamental change in motivations brought about by economic, cultural and social developments. As regards agriculture, the main transitional problem will be the development and introduction of agro-systems that are resilient in the long-term and which do not result in the degradation of arable land or increased resistance to insecticides or water pollution. With respect to technology, the directions towards which it is already moving, present numerous possibilities for the future.

In respect of raw materials, the future problems are likely to be the development of techniques for mining low-grade ores; the working of deep or remote mines rehabilitation of mine land; institutional questions relating to the law of the sea and development of technologies for exploiting the sea-bed: the quest for industrial processes to substitute materials in plentiful supply for those which are more scarce; and adequate investment in the raw materials sector.

As regards energy, three broad avenues are open, namely :

(i) conservation and efficient use of energy;

(ii) the substitution of coal and nuclear energy for oil; and

(iii) the development of new renewable sources of energy.

At present one cannot but be deeply concerned by the uncertain energy future. The world energy scenario developed by the International Energy Agency is quite revealing in this respect. Even after assuming a moderate economic growth, improved energy efficiency, higher OPEC production, doubling the use of coal and substantial increase in nuclear energy, there may still be a sizable energy gap in the coming decade. The development of nuclear energy is considered indispensable to bridge this energy gap. This emphasizes the need to raise public morale regarding safety and especially long-term safe disposal of wastes, before nuclear energy becomes more widely used. If the present misgivings and uncertainty about nuclear power were to continue, the total world energy gap may further widen to around 45 million barrels of oil per day by 2000 A.D.

In this situation, the efficient use of energy is of crucial importance, simultaneously with conservation measures. It is estimated that with more efficient use of energy by all sectors including industrial, residential and transport on a world-wide basis, substantial savings can be effected. The industrial sector which accounts for about 40 per cent of all energy used, has already made significant savings, in the wake of the rising energy costs.

The adverse effects of the world-wide energy crisis are being acutely felt by all non-oil producing nations including India which imports about two-thirds of its crude oil requirements at present. Therefore, coal as an energy source has assumed special significance. India is fairly well placed in this respect and the estimated reserve of about 90,000 million tons of non-coking coal will be adequate to meet India's energy requirements for the next century or two, even at higher rates of exploitation.

Coal is used for thermal power generation and for meeting other fuel requirements. However, even with the best conventional thermal plant, coversion efficiency is less than 40 per cent. Therefore, new methods of energy conversion for improving the efficiency are being developed.

The most notable is the combined magneto-hydrodynamics (MHD)– steam power generation cycle. With this technology, it is estimated that conversion efficiency can be raised by another 15 per cent to 50-55 per cent, thus reducing substantially the coal consumption and also thermal and waste gas pollution. As a result of the intensive development work on MHD in progress in the advanced countries, it is expected that the combined MHD-steam cycle will be ready for large-scale economic exploitation within the next decade. So far as India is concerned. the experience gained in the experimental coal-based MHD power plant being set up jointly by BARC and BHEL at the BHEL complex at Tiruchirapalli may well usher a new era in India's power generation and potential.

India has already made excellent progress in nuclear technology, starting from scratch. In fact, the efforts of Dr. Homi Bhabha for self-reliance in this field have paid off. The Jadugoda Uranium Mill and the Nuclear Fuels Complex at Hyderabad are entirely the work of Indian scientists and engineers. Also, India is the only developing country to have established facilities for the complete nuclear fuel cycle starting with uranium exploration, mining, extraction and conversion through fuel fabrication, heavy water production and reactors to reprocessing of spent fuel and waste management and disposal. Technologically speaking, therefore, India is in a position to establish a chain of nuclear power stations, which can successfully tackle the mounting energy crisis. The prospects for nuclear power generation in India will further brighten with the success of the experimental fast breeder reactor station being set up at Kalpakkam. If fission fuel can be produced from thorium by the fast breeder cycle, the prospect of increasing our nuclear power generation is assured, because India has one of the largest resources of thorium mineral in the monazite deposits of beach sands in Kerala and other places. Also, power generation by controlled nuclear fusion apart from its greater efficiency may hold less radiation and waste disposal hazards than nuclear fission.

In contrast to all other sources of power, solar energy is both pollution free, safe and inexhaustible. There is a world-wide realisation that in spite of the formidable problems of low intensity, intermittent availability and difficult storage, solar energy may yet prove to be a reliable source. In India, development work is in progress on solar grain dryers, water heating system, solar power cold storage systems etc. Direct conversion to electric energy by photovoltaic solar cells would appear to offer the maximum advantage for a tropical country like India with many hours of sun light of greater intensity, distributed more uniformly throughout the year, than in temperate zones. It was recently reported that the prototype of new silicon photovoltaic cell developed by Central Electronics Ltd is currently undergoing field trials in the villages of Rajasthan.

A recent development which presents great possibilities under Indian conditions, is the solar pond'concept for the economic conversion of solar energy using a body of water as an inexpensive medium not only for collecting but storing this energy. The concept is based on the prevention of natural convection in the water by the density-gradient in the water due to dissolved salts, as in sea water. A solar pond of only one square kilometer would produce about 40 million kWh a year, the equivalent of a 5000 kW power plant. Used as a heat source, the solar pond is even more attractive, and one square kilometer would annually yield the heat equivalent of 50,000 tons of fuel oil. Another advantage of the density-gradient solar pond is the possibility of its use simultaneously for the desalination of water to produce fresh water and by-product salts. Israel, the innovator of this technology, is planning to generate 2000 megawatts of electricity from the Dead Sea by the year 2000 A.D.

Advanced countries like the USA and the USSR are already thinking in terms of space shuttles, factories in space and satellite power system. If the space programmes move according to schedule, by the next decade space shuttles may be expected to carry technicians, assemblers, machinery and factory components into orbit, to build factories, power plants, observatories and laboratories in space.

The products that can be manufactured in space under near perfect vacuum, zero gravity conditions are fascinating. To mention only a few, perfect crystals for the electronics industry; ultrapure glass for laser transmissions; defect-free, long life metals for the turbine industry; immiscible materials fused together to produce new materials such as steel-and-glass etc.

But the most astounding development may be the satellite power system which can generate electrical power in space and transmit it as microwaves to a receiving station on earth directly below, where they will be converted to electricity for distribution by conventional power distribution system.

India has to travel a long way to achieve this sophistication in space and energy technology, particularly in view of the enormous resources and sophistication in electronic and computer technology required for this type of research. However, the country has already made a good beginning in space technology and solar power generation.

Electronics technology has witnessed a veritable revolution with the discovery of semi-conductors and the invention of the transistors and the integrated circuits. These innovations drastically reduced the size, cost and power consumption of any equipment in which they were used. This in turn led to the developments of a new generation of desk-size computers. The culminating innovation was the revolutionary microprocessor developed in the sixties, in which all the arithmetic and logic circuitry of a computer was crowded into one tiny silicon chip, with the input and output programming units on separate chips.

With new developments following in rapid succession, the processor function has been extended by adding a memory to the same single-chip and microcomputers have now come into use. One of the difficulties experienced in modern high speed computers with semi-conductor technology is the generation of heat in the circuitry, which set a limit to the development of midget supercomputers. However, the new Josephson technology of high performance processors using the phenomenon of superconductivity of metal alloys cooled to the temperature of liquid helium, holds promise of being able to take over from silicon and other semi-conductors, combining smallness with very high speed and extremely low heat dissipation. The development of this technology may pave the way to the supercomputer of tomorrow which will be very small and incredibly fast—in fact comparable to the size of the human brain and perhaps more infallible in logic and computation.

The development of computers and the rapid advances in computer technology have provided the engineer and the scientist with a fast and reliable engineering tool not only for rapid problem solving but expeditious information processing and communication. There has been 'information explosion in the wake of the rapidly changing technology and industrial and economic developments, which the conventional library information and documentation services are totally inadequate to handle. This has led to the development of newer systems of collection, storage, retrieval and dissemination of information. The key element of this system of information management is the computer. As the information machine of the future, it will permit not only mass storage of information in the language of bits, but speedy access to all kinds of information-gathering capabilities and its expeditious dissemination.

The rapid interchange of information will be further facilitated by the recent advances in communications technology through the deployment of optical techniques using glass fibres and lasers. Theoretically, a single glass fibre teamed with a laser can transmit the full 30 volumes of the Encyclopaedia Britannica in one-tenth of a second. Moreover, the computer of the future is expected to respond to speech and to read pictures and symbols by pattern recognition logic as well write them more rapidly than ever. These developments will not only provide the scientists and technologists access to world-wide information, but assist them how best to use them in a given situation.

The rapid technological advances in recent years have presented many a challenge and opportunity to Indian technologists to find practical solutions to a number of problems in the context of these developments. The newer fields of engineering such as aerospace, nuclear and other methods of power generation, electronics, oceanography, desalination etc. have also stimulated the demand for new materials. This has led to the development of a new class of materials such as titanium, magnesium and aluminium alloys, special steels and superalloys, cermets and composites.

To meet the high standard of quality requirements, accuracy and reliability of performance of both conventional and new materials, a new technological discipline called 'Materials Science' was introduced about two decades ago. No doubt, the physicist, the chemist and the metallurgist in their own specific ways study materials scientifically; but materials science encompasses all these disciplines to evolve a more cohesive and critical understanding of materials and their properties, based on atomic structure and fundamental principles of atomic and molecular bonding. It covers all materials—metals, glasses and ceramics, polymers, composites etc; and all properties—mechanical, electrical and magnetic. This unified and inter-disciplinary approach to the study of metals and materials has immensely widened the horizons for the materials-scientist and the engineer.

Many national issues of today such as energy policy, development of national resources, choice of technology for industrial projects, development and encouragement to indigenous technology, technology imports, science and technology policy, engineering education, environmental protection etc. concern the technologists in some way or other. They have a recognised and essential role to play in the identification of the issues and investtgation of th complex ways in which technological aspects interact with economic, social, political, ethical an othter factors.

In a democratic set-up, it is perhaps inevitabl that sometimes the politicians may be tempted t make short-term decisions which are popular, rathe than long-term decisions of national importanc where immediate benefits may be less obvious. Thi type of approach to vital national issues involvin technology can be extremely frustrating to an engineer who has been trained to seek and examin technological and economic facts and then come t conclusions based on these facts. However, it is no always easy to convince the bureaucrat on matters of technology. There is, therefore, a vital nee for increased technology/government/public interface for a meaningful communication and exchang of ideas and facts. This will lead to a better understanding of the techno-economic issues, the social needs and national objectives, for decision-making.

In the context of the rapid technological advances, engineers who are key figures in the technological innovation and progress, are themselves subject to technical obsolescence. The need for continuing education to keep abreast of technical developments is therefore imperative. The formal education one receives in a technical institution is only the beginning of a life-time of learning. The engineer has to plough back a part of his time to this business of continuing education. The need for additional training to keep engineers up-to-date is being increasingly recognised and industry is paying more attention and investing more money on continuing training programmes. Progressive industrial firms encourage their employees to take these specialised training programmes or sandwich courses in the relevant fields.

(*Excerpts from the Convocation Address delivered at the Institute of Technology of the Banaras Hindu University*)

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University Libraries in Karnataka

The library as an organised institution, right from its inception made available to a larger community the knowledge of a few scholars.

In the past readers visiting the library were left to themselves to gather the information they wanted from the available resources within the four walls of the library by their own efforts. The proliferation of publications both in size and scope, the advent of a variety of newer media available for collecting and disseminating information, the growing specialisation in various disciplinces and providing materials for the interdisciplinary nature of research have all contributed in creating a complex situation in organising libraries for the benefit of users.

In the changed situation librarians are called upon to have effective control over the scattered and varied resources by adopting appropriate bibliographic apparatus which can permit the users to retrieve the information the way they want and when they want. The modern librarianship essentially depends upon availing the benefits of modern technology which has provided viable and swift communication aiming to conquer time and space.

The motto of any library is not to remain as store-house of unwanted materials, but to operate as a dynamic instrument of education. To achieve this objective the need of the hour is to adopt new structural arrangements based on comprehensive planning to meet the needs of clientele who tend to expect more active assistance in current awareness, location of materials and supply of documents with utmost speed and economy.

In any planned programme for development of university libraries, one must take into consideration three major aspects, viz. building library resources, providing competent professional and non-professional staff and establishing co-operation and co-ordination among libraries after taking into consideration the present strength of students and anticipated strength, existing departments and new departments, on going research and future research projects.

With the constraints of scarce finance and other resources now felt, building a worthwhile library, appropriate to the teaching and research requirements of scholars, is no easy task. In a modern university library, collection consists of well-chosen primary and secondary sources of information including special materials, such as, micro-documents, gramophone records, tapes, photographs, charts etc. Selection of these materials should be planned systematically in accordance with well-defined policies and procedure.

As the Education Commission pointed out, "A collection of books, even a collection of good books, does not constitute a "library". Given enthusiastic teachers' 'who can teach with books', and librarians who can co-operate with them in converting the library into an intellectual workshop, even a comparatively small collection of sensitively chosen books may work wonders in the life of students".

When new universities are being planned at Gulbarga and Mangalore, it would be worthwhile that they learn from the experience of older universities and not repeat the mistakes committed in assembling vast resources which are scarcely used due to various reasons, which could only end in huge amounts being invested without bringing commensurate benefits. The new university libraries should give priority in collecting and maintaining books and other materials for which immediate access is vital for intellectual activities. Experienced university librarians should be associated right from the beginning as consultants in building up core collections.

For swift communication, steps should be taken to link existing and proposed university libraries through telex. In the initial stages many scholars and students who are engaged in research and specialised studies have to depend upon well-established university libraries. Such scholars may be encouraged to visit these libraries by providing suitable incentives such as travel grants and special leave etc.

The Education Commission states : "No new university, college or department should be set up without taking into account its library needs in terms of staff, books, journals space etc." It goes to the credit of the one-man commission appointed by the Government of Karnataka for having accepted this principle while making recommendations for development of libraries in the proposed universities.

To start with adequate budgetary provisions have been indicated for purchase of books and journals and provision has also been made for the appointment of library staff. For each of the university there is a budget proposal of Rs 35,00,000 for purchase of books and journals in addition to Rs 2,75,382 being annual expenditure on salaries of library staff. The staff pattern for each of the proposed university consists of one librarian, one deputy librarian, one documentation officer, four assistant librarians, six library assistants, one superintendent, eight typists-cum-clerks and four attenders, binders, etc.

In particular, the commission has highlighted the need for having modern reprographic facilities at the new university libraries. Based on the survey specially to be conducted for assessing the service potentialities of the existing college libraries and institutions where discipline specialisation already exists, an integrated library system is proposed under the overall control of the Central University

Library so that both post-graduate and undergraduate students could avail of the library facilities. The Commission's recommendation when implemented, will constitute a first step in resources sharing among the academic libraries in Karnataka and sets a new trend for future development of university libraries.

In any scheme of developmental activities, the selection of a highly qualified library staff should receive immediate attention, since the development of university libraries as an active instructional agency needs men and women of high intellectual calibre and professional competence. It is, therefore, necessary to give academic status to professional librarians at par with the faculty in terms of status, salaries and privileges. This is one way to attract really talented persons to manage libraries on a sound footing. For the library staff who are already on the job, there should be a provision to arrange in-service training continuously in order to promote and facilitate their professional growth.

It is proved beyond doubt that no single library can even boast to be self-sufficient in terms of resources and services—not even the British Museum Library or the Library of Congress. Hence, it is necessary to encourage deliberate co-operation and co-ordination between the existing university libraries and the new ones in order to establish a close rapport between the universities in the service they have to render. Generally in the Indian context, resource sharing is mainly confined to inter-library loan system which forms just a part of the resource sharing. In practice, there is wider scope in pooling the resources and services of all types of libraries and information centres to meet the needs of the readers more efficiently as well as economically.

There are four important areas where it is possible to establish effective resource sharing capabilities depending upon local and national needs : (1) in the field of acquisition activities either area-wise or discipline-wise on the pattern of Farmington plan, originated by the Association of Research Libraries in US to procure foreign books on methodical and rational basis throughout the country. On similar lines, recently national libraries of Scandinavian countries—Denmark, Finland, Norway and Sweden—have entered into an agreement on the distribution of scientific literature among the main libraries of the participating countries ; (2) in establishing co-operative and centralised cataloguing where books and other materials are centrally processed and made available to other libraries. An outstanding example in this connection is Machine Readable Catalogue (MARC) Project; (3) in establishing depository centres of either less used or costly documents and making such documents available to the respective readers avoiding unnecessary duplications, on the pattern of the Midwest Inter Library Centre and (4) in establishing a regional computer centre involving co-operation between libraries of different types on the model of Birmingham Libraries Co-operative Mechanisation Project (BLCMP), or to use shared computer on the model of the South West Academic Libraries Co-operative Automation Project (SWALCAP).

There are many more interesting and nov projects both at national and international levels i resource sharing but we can only plan such schem that will suit our local conditions, based on appropriate technology easily available with us.

Taking into consideration the utility from th point of economy and efficiency it is expedient t appoint a high-powered committee under the chairmanship of the State Education Minister and participating librarians as members to find out ways an means of establishing effective co-operation and co-ordination of resource sharing in these universities both on voluntary basis and by means of direction given by the funding authorities such as Stat Government and the University Grants Commission On the recommendation of such a committee policy and programmes should be drawn to establis an "Academic Library System in Karnataka", which will work in the following manner.

There should be an overall system to co-ordinat the library activities of all academic libraries Such a system may be named as "The Academic Library System in Karnataka". Then there shoul be a sub-system within each university. This may be called the university system named after particular university. In the subsystem the university library is expected to co-ordinate the library activities of the various departments and constituent colleges. It should be the responsibility of the university librarian to inspect and advise from time to time the development of college libraries and ensure that each constituent college establishes effective library service to meet the demands of the undergraduate teachers and students.

Public libraries in Karnataka are still in a developing stage, in terms of resources and service and the time is ripe to have a public library system, at this stage of development. As far as special libraries are concerned efforts are being made to establish a national system through the efforts of NISSAT (National Information System for Science and Technology) and it would be proper for special libraries in the State to join the mainstream and benefit thereby from the National Library System. Thus in due course of time, it is envisaged that there will be three systems, namely, (a) The Academic Library System; (b) The Public Library System; and (c) The Special Library System. When these three systems become operative there will be scope for interaction between these systems to their mutual advantage and thus increase resources sharing capabilities among libraries in Karnataka.

Though in theory, the resource sharing activities are well known and many national and international programmes have been initiated in practice many of such projects have remained ineffective due to lack of sustained efforts on the part of the fund giving authorities and due to lack of dynamic leadership.

(*Continued on page 364*)

Educational Production Centres

O. S. Dewal*

Some people think that Lord Macaulay still guides Indian education from his grave. Educational waters, since 1857, are certainly not standing still and stagnating.

Much has changed. Changes can be seen distinctly in six areas. The government and the voluntary bodies have helped in the extension of education. The structure of education has changed from high school to higher secondary, to ten plus two schooling. The curriculum is made relevant to the learner's needs. The media and methods of teaching are also undergoing changes, of course slowly. Evaluation which was subject-one-shot-once-a-year affair is becoming objective, comprehensive and a continuous process.

Although there is no need for pessimism and pathological cynicism, one cannot remain complacent. There are many things which we should do, and do urgently. A few things are well known. We should universalise elementary education, undertake boldly adult education and make the curriculum environment based. Our progress is not disappointing but the target is still far off.

As compared to the 1947 figures, the number of universities in 1975 increased by eight times, high schools by eleven times, middle schools by ten times, and primary schools by four times. Similarly there is a colossal increase in the student enrolment from 35 per cent to 86 per cent at the primary level, from 9 per cent to 38 per cent at the middle stage, and 4 per cent to 22 per cent at the secondary stage.

This rosy picture immediately turns pale the moment we see that out of the total outlay on education, 61 per cent was devoted to school education which could only keep in the secondary school system 22 per cent of the total student population of that age group. If we want to have 50 per cent enrolment at the secondary level, we will have to spend the total outlay on school education and more only on secondary education. This is not feasible.

One of the things which has come to be realised recently is that formal institutionalised systems cannot help achieve our goals. Frantic efforts need to be done to explore alternative strategies. We have to resort to non-formal systems to realise educational targets. Attempts made so far are rather slow.

The point that if education is to be extended throughout the life of the learner, it should go and knock at the door of the learner is overlooked. We need to look hard at our existing system. Can we produce relevant, need-based instructional material with local colour? Do we have a sound distribution system?

The above questions call for the setting up of educational production centres all over the country. Verily it should be the task of the Eighties. As social, economical, and cultural, realities change, we should evolve new, innovative and responsive models. There is a sizable number of learners who can read and write and are keen to improve their technical and professional competence. They want to broaden their general interests and improve their vocational skills. They want to read some relevant material on the topic of their utility or interest. But they are kept educationally hungry as such material which can satisfy their educational thrust, either does not exist or is not readily available or is exorbitantly priced. The answer to this problem is to set up district education centres which will produce such material and sell it on a no-profit-no-loss basis.

How to go about it? The programme to me involves these activities, identifying areas on the basis of the needs of the learners, producing material using local talent and local resources, and developing the basic infrastructure for distribution.

It is my hunch that if small booklets on child care, nutrition, how to start poultry, how to get bank loans, etc. are prepared at the Panchayat/District level with the help of local experts, local resources, with local colour, local illustrations and distributed on time, people will appreciate the move. There is a will on the part of the adult learners but there is a chronic shortage of such reading materials. Where material is available, it is not distributed properly. Very often much literature either is used (shown) on ceremonial occasions or is piled up in office stores.

To test the feasibility of this idea it should be taken up as a pilot project in a district. The steps involved are: undertaking a survey to find out how many people feel a need to have need-based education material; what the important topics are on which the educational material should be developed; and what is the priority; setting up a Panchayat/Education District Samiti; spotting the local talent; producing with the help of local resources and printing the reading material; pricing it suitably; developing an infrastructure for distribution; actual distribution; obtaining feedback on utilisation; and on the basis of the feedback, making the necessary changes.

(*Courtesy* : *The Hindu*)

**Director, Open School, CBSE, New Delhi.*

Tenure extension for teacher fellows

The University Grants Commission has worked out a detailed procedure for consideration of proposals for tenure extension from teacher fellows. The proposals for extension upto a period of six months for completing project work for M. Phil or Ph.D. thesis can be considered on the merit of each case by the Centre / Department concerned provided the teacher fellow concerned has not been on leave beyond the period permissible under rules and that the number of teacher fellows including those whom extension is given by the Centre/Department does in no case exceed the number of teachet fellowships allocated to the Centre/Department concerned at any given time. Proposals for extension of long term fellowships could be considered in special cases upto a period of one year beyond three years. Such cases should be considered by the Centre/Department well in advance and the decision taken at least three months before the expiry of the normal tenure of the teacher fellow and communicated to the college where the teacher is employed so that the college could decide about continuation or otherwise of the services of the substitute appointed in place of the teacher fellow concerned. The Centre/Department should also ensure that the teacher concerned completes his Ph.D. thesis/project work for M. Phil within the extended period.

As regards teacher fellowships awarded directly by the Commission, proposals from the holders for extension may be sent to the Commission by the concerned department through the university for consideration along with the following documents well in advance so that they reach the Commission's office at least three months before the expiry of the tenure of the teacher fellow concerned.

(a) A report giving details of the work already done by the teacher fellow indicating the list of publications if any during the tenure of the teacher fellowship.

(b) Specific reasons on account of which the fellow could not complete the work within the normal tenure.

(c) Details of work to be done during the extended period along with an assurance that the Ph.D. thesis/project work for M.Phil would be completed during the period for which the extension is being sought.

(d) Specific recommendations of the Supervisor and Head of the Department/Centre concerned on the proposal of the teacher fellow for extension of his tenure.

Proposals for extension in the case of teacher fellowships awarded under the scheme of development of undergraduate education may be sent by the college where the teacher is employed well in advance for consideration by the Commission so that it reaches the Commission's office at least three months before the expiry of the fellowship tenure along with the documents mentioned above and the recommendations of the Principal of the College.

New UGC aid pattern

Prof Satish Chandra, Chairman, University Grants Commission, said in Trivandrum that during the Sixth Plan the universities in the country would be brought in three categories according to the stage of their development for UGC assistance. The categories would be 'developed', 'developing' and 'yet to be developed'. While addressing the valedictory function of the State Conference of University Teachers' Federation, Prof. Satish Chandra said the UGC had informed the Planning Commission of the need for a better funding system and expressed the hope that the availability of funds for higher education would be better during the Sixth Plan. He said under the new system allocation of grants for general development would be less for the universities in the developed category. Funds for such universities would be mainly for undertaking quality research. He said about 24 universities could be termed as developed and about 60 as developing. The efforts of the UGC during the Sixth Plan would be to raise the level of at least one third of the universities in the developing category to that of the developed. The categorisation would not however be an impediment to any university in getting assistance for the quality research. Stressing the need for carrying out fundamental research, Prof. Satish Chandra said priority areas for research varied from State to State depending on local conditions. Kerala for instance could concentrate on areas like sea erosion, forestry and fisheries which were of vital interest to the State. Referring to the demand of college teachers for UGC scales of pay, Prof Chandra said the demand for higher pay scales should be combined with efforts for a meaningful change in the educational system.

Medical brain drain

According to the World Health Organisation, India is the world's largest donor of medical manpower. An estimated 15,000 Indian MDs are working abroad and there is scarcely a recipient country in the world where there are no Indian physicians. The Philippines is the second largest donor. According to the study in the early 1970s about 1,40,000 physicians were working outside their countries of origin.

There were about 77,000 migrant physicians in the USA, 21,000 in the UK, 11,000 in Canada, 6,000 in West Germany and 4,000 in Australia. About 5% of all the world's nurses are estimated to be outside their countries of origin and each year 15,000 nurses migrate. The number one donor country of nurses is the Philippines. The money spent on the education of these migrant physicians would have been better spent on other forms of health personnel and health care. The study contends that the responsibility for the brain drain rests equally upon the rich recipient and the poor donors. According to the study, developing countries turn out more MDs than they can afford to employ. The situation is just the reverse in the developed countries. Migration is therefore inevitable for at its root is supply and demand.

According to the WHO study India with per capita income of about 120 dollars and a growth rate of 1.5 per cent really could afford only 35,000 physicians. The study notes that the number of physicians in India in 1972 was about 1,35,000. As the vast majority of Indians cannot possibly pay for private care, about 80,000 to 100,000 physicians were surplus in India. The drain on a country is not so much in the loss of brain but in the money put into the education of physicians who unable to find employment at home seek it elsewhere. To help manage the migratory flow the study has advised the health authorities to (1) produce just as many doctors as the country can afford; (2) plans for numbers and categories of health personnel; and (3) match the education and training programme to the country's priorities.

Withholding of passports, banning foreign qualifications and forcing the doctors to work in 'hardship areas would only create greater discontent and encourage illegal migration, the study suggested.

Madras revives intercollegiate lectures

The Syndicate of the Madras University at its meeting held recently in Madras decided to revive the intercollegiate lecture system for postgraduate courses in Madras and P.G. extension centres at Coimbatore and Tiruchi. This system will enable the students of colleges to have the benefit of lectures from specialists. The Syndicate also decided to institute private appearance for the B. Litt course for teachers who have completed 28 years of age. Similarly private appearance for the 'Pulavar' course would be continued for the benefit of teachers and according to the scheme the preliminary and final examinations can be written in 1981 and 1982 subject to the age regulation of 20 years. The constitution of a committee to study and recommend whether a new course called 'Management of Educational Institutions' should be instituted in the university was also approved by the Syndicate. A new degree course called 'Temple Architecture' was also decided upon. This course will be conducted at the Tamil Nadu Institute of Architecture and Sculpture at Mamallapuram. The Syndicate approved the setting up of a committee to draft the regulations and syllabus for the course.

Educating students in population problem

Concepts of population education are to be introduced in the formal system of education. The Government of India has approved a programme designed to ensure that the younger generation grows up with adequate awareness of the population problem and its responsibility in this respect.

The programme is estimated to cost Rs 4.26 crores during the three years 1980-83. It involves the preparation of curriculum and material at the national and state levels and training of teachers and field-workers. Material will also be developed for out-of-school children in non-formal education centres.

Ten States have already taken up the programme this year and nine others will do so next year. The ten States and Union Territories presently participating in the programme are: Bihar, Chandigarh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and Tamil Nadu.

The programme has been prepared in collaboration with the United Nations Funds for Population Activities (UNFPA) and with the active involvement of the Ministry of Health and Family Welfare, which is the nodal Ministry for the population education programme. It will be implemented by the Ministry of Education and Culture.

A National Steering Committee will have an over all authority for coordination and implementation. The National Council of Educational Research and Training will render technical assistance. Coordination committees and population education cells are being set up in the States to implement the programme on the basis of approved work plan.

Madras approves new syllabuses

The Academic Council of the Madras University at its special meeting approved the revised regulations and syllabuses for the BA, BSc and BCom degree courses consequent on the introduction of the+2 course. These are to take effect from the academic year 1980-81 when the first batch of students from higher secondary schools in Tamil Nadu will be joining the colleges.

The special meeting was convened since the earlier meeting of the Council did not agree to the restructuring of degree courses but wanted only the enrichment of syllabuses within the existing pattern.

The Syndicate at its meeting held in May last accepted the regulations and enriched syllabuses as recommended by the Boards of Studies. These recommendations were approved by the Academic Council.

Mr G.R. Damodaran, Vice-Chancellor of the University, referred to the various legal aspects of the various problems and suggested that these should be examined in detail before implementing them.

The question of according higher priority to internal assessment as compared to external valuation was also discussed. Some members wanted the total abolition of internal assessment while others pleaded for greater weightage for it.

Delhi to impart community health diploma course

The Institute of Public Health and Hygiene, New Delhi will be offering a Community Health Workers' Diploma Course from the academic session 1980-81. The syllabus of the diploma course is based on three-postgraduate health education courses of the University of Delhi and the University of Calcutta. After successful completion, the diploma holders would be eligible for appointment as Sanitary Inspector; Food Inspector; Malaria Inspector/Worker; Community Health Worker; Multipurpose Health Worker; Vaccinator; Health Educator; Asstt Sanitary Inspector/Sanitary Guide; Labour Health Welfare Inspector; Family Health/Welfare Worker; Public Health Worker, etc.

For admission to the said diploma course, the candidates must have passed Matriculation or its equivalent examination of any recognised Board / Institution. The duration of the course is 10 months and the final examination will be held in May, 1981. There is no age restriction for admission in the said course. Postal coaching facilities are also available for persons either in employmant or residing outside the Union Territory of Delhi. Private candidates are also allowed to appear in the examinations.

Book extension counters proposed

The Bhartiya Vidya Bhavan proposes to open book extension counters as pilot project in some selected colleges and schools. Details of the project have been worked out and the Bhavan will arrange to procure and supply the publications to the principal of the institution concerned where the counter has been established. The institution accepting the project will establish a readers' club for the students which will organise meetings to introduce books and discuss them as also book exhibitions and programmes of a competitive nature whereby reading habits are tested and encouraged.

Mr Prabhudas Patwari, Governor of Tamil Nadu, who presided over the meeting said it was the duty of every parent to provide wholesome literature to the youngster which was food for the soul. The management of schools and colleges, local bodies and the Government has also a big role to play in this direction. He said that with a view to keeping the youth away from evil influences, he had ordered that no new cinema hoardings and posters be put up in the vicinity of schools and colleges.

Mr C. Subramaniam, former Union Minister, explaining the salient features of the project pointed out that the project had become imperative as a review of the reading habits of the youth presented a rather dismal picture of undirected and purposeless effort. The main object of the project was to see that the youth cultivated the habit of reading. He said that it might be possible to get financial support from the UGC if the colleges undertook the programme of readers club as a part of the college improvement scheme. He also suggested the Bhavan to explore the possibility of donors' names being given to the countries and the interest accruing from the capitalised amount being used for running the counters.

M.Phil course at SNDT

The SNDT Women's University will be offering the M.Phil course in English, Gujarati, Marathi and Sociology at the Department of Postgraduate Studies and Research from the current academic session. The programme is intended to deepen knowledge in respective disciplines, develop communication skills and to provide training for research for Ph.D. degree. Those holding a master's degree in the concerned subjects will be eligible for the course.

Certificate course in Sanskrit

Kurukshetra University has decided to start a one-year certificate course in Sanskrit from the coming academic session, with a view to promoting and disseminateing knowledge of Sanskrit language and literature.

The classes will be held in the Department of Sanskrit in the evening and no tuition fee would be charged. Persons who have passed the Matriculation or an equivalent examination are eligible to join this course.

J.P. Chair proposed at Calcutta

To perpetuate the memory of Shri Jayaprakash Narayan, the Calcutta University has decided to create a chair for social thought after the name of Loknayak. The universities authorities will soon be writing to the University Grants Commission for necessary funds.

Madurai to host world Tamil conference

The Education Minister of Tamil Nadu said in Madras that his Government will be hosting the World Tamil Conference in Madurai during January 1981. A large number of foreign delegates are expected to participate. The government has appointed a special cell for making elaborate arrangements for this conference.

Personal

1. **Mr. J.S. Khanna has been appointed Registrar of the Guru Nanak Dev University.**
2. **Mr. L.S. Sandhu has been appointed Finance and Development Officer of the Guru Nanak Dev University.**
3. **Prof. R.D. Singh, Head of the Department of Mining Engineering, Indian School of Mines, has been awarded the Dewan Bahadur D.D. Thacker Coal Mining Gold Medal for 1978-79 for his outstanding contributions to coal mining and related sciences.**
4. **Prof. I. J. Nagrath of Electrical and Electronics Engineering Department and Dean, Instruction Division, BITS, Pilani, has been awarded a certificate of Merit by the Institution of Engineers (India) for his joint paper entitled "Security Constrained Economic Thermal Generating Unit Commitment."**

GNDU organises seminar on 'Punjab Economy in Retrospect and Prospect'

A seminar on 'Punjab Economy in Retrospect and Prospect' sponsored by the Indian Council of Social Sciences Research was held at Punjab School of Economics, Guru Nanak Dev University, Amritsar. The seminar was inaugurated by Dr K.S. Gill, Vice-Chancellor of the University.

Giving various facts and figures, Dr Gill highlighted the achievements of the Punjab economy and explained how she was having the highest per capita income in the country. He also brought out the precarious deficiencies of this prosperity as indicated by absence of large scale industries, minerals, power, shortage of industrial inputs like coal, steel, pig-iron, diesel etc. as well as lack of trade opportunities with Pakistan. All these factors, he said, have given rise to an economy with highly developed agriculture on the one hand and lagging industrial development on the other. A balance growth of Punjab economy needed rectification of this imbalance.

Welcoming the delegates, Dr R.S. Johar, Professor and Head, Punjab School of Economics also highlighted the deficiencies of Punjab economy and laid stress on the need for industrial development.

The first session was presided by Dr K.S. Gill. Dr. Gill's paper: 'Employment and Unemployment Problem in Punjab' broke new ground on research on a difficult aspect of the developing economic situation in Punjab.

His analysis brought out :

(1) that the average labour productivity in manufacturing was only 77 per cent of the productivity in agriculture in Punjab as against 225 per cent for India as a whole;

(2) the bleak prospects of educated employment in Punjab;

Fifteen papers relating to Punjab agriculture were presented. The thrust of the analysis in the papers was to identify the resources of imbalance in the growth of Punjab agriculture.

Sixteen papers relating to pattern and strategy of industrial development, trade unionism, commercial banking, plan evaluation, industrial focal points, rural-urban migration in Punjab and some micro-level studies in steel rerolling and engineering goods, were presented. Some of the interesting papers dealt with the lagging industrial development of Punjab in historical perspective, the poor linkages between agriculture and industry in the State and a study of the consumption pattern in Punjab.

Besides others, the Seminar provided opportunities to young researchers to discuss the findings of their research. The Seminar was informed that another Seminar on 'Problems and Processes of Industrialisation in Punjab, was being planned by the Punjab School of Economics, in the year 1980-81.

Delhi to set up science centre

A science centre and a science park are proposed to be set up in Delhi to help spread popular understanding of science and technology. A decision to this effect was taken at a meeting of the Educational Council of Science Museums held under the chairmanship of Education Minister, Shri B. Shankranand.

The science centre will display working models to explain subjects like space exploration, telecommunications and computer systems. The Council also decided to set up 20 district science centres in backward areas. A children science park has already been established in Bombay and a science centre in Patna is under construction. The Education Minister said that the Council should expand its activities by setting up science museums in all parts of the country. The National Council coordinates the activities of the existing science museums in Calcutta, Bangalore and Bombay. It was formed two years ago to develop a chain of science museums in the centre.

Osmania to introduce field work scheme

Osmania University will introduce field work as part of curriculum at degree level in selected colleges from the coming academic year. The scheme will be introduced in 24 colleges including two medical and one engineering colleges under the university jurisdiction where the National Service Scheme (NSS) and restructured courses are working, satisfactorily.

The aim of the field work scheme is to expose the students to the realities in the society in the form of extension work.

The first year students in the selected colleges will take up field work for two half-days a week or four days in a month. A specific mention of their field work experience will be made in their degree certificate. One subject among the three undergraduate subjects will be recast for the student. Thus a student will choose any of these subjects for field work, the other two subjects being offered in the conventional manner.

The evaluation of field work will be through internal assessment and it is suggested that ten per cent of the subject marks will be allotted for this purpose. No student will be permitted to write the theory examination without putting the required field work attendance.

All the students from the selected colleges enrolled under the field work scheme will necessarily be the volunteers of NSS. The NSS functionaries both at the university and college-level will coordinate the field work scheme.

UK's gifts to Union Public Service Commission

Two optical mark reader machines worth £60,000 (about Rs 10.8 lakhs) have been given to the Union Public Service Commission (UPSC) by Britain under Colombo Plan technical co-operation arrangements.

The machines will be used to process the answers written by candidates for the public service onto magnetic tapes which can then be put through the UPSC's computer. Each machine can Process 3,000 forms an hour.

Britain has been collaborating with the UPSC in implementing reforms and innovations to improve efficiency. To this end, two one-week workshops were held in January this year in Delhi and Patna, which were attended by five British specialists. Two more one-week workshops will be held in October in Bombay and Bangalore.

Grants for Bihar University to be revised

The statutory grants to different universities in Bihar are to be revised soon to resolve their financial crisis. Dr S.P. Sinha, Chairman, Bihar State Inter-University Board, said in Patna that the old statutory grants of the universities had not been revised since long as a result of which the universities were finding difficulty in carrying their even day-to-day work. He said that the grants sanctioned by the government were inadequate and hence the universities had to take bank overdraft to meet their expenditure. He said that the Chancellor had taken steps to get the statutory grants of the universities revised very soon to ensure smooth flow of government money to the universities.

Dr Sinha said that the universities would get special supply of electricity to carry out science practicals and research activities. The Electricity Board, he added, had been requested to ensure at least four hours uninterrupted electric supply to the universities every day. The Board had already decided to instal power generators in every university to meet their electric requirements.

Correspondence course commended

Prof. G. Ram Reddy, Vice-Chancellor, Osmania University stressed the importance of open university system of education as it was in no way inferior to the conventional college education. Through correspondence, he said, large sections of people could be reached and the students should take advantage of it as it was cheaper method of imparting instruction.

Inaugurating the six-week Correspondence cum-Contact Programme in Education organised by the Department of Education of the university, Prof. Reddy said there should be no compromise in quality of education imparted through correspondence.

Mr M. Gopalkrishna, Education Secretary, who presided, said correspondence courses have a special significance in our country due to large percentage of drop-outs. The teachers already in service would largely get benefited through the correspondence courses.

Bihar organises workshop on question bank

The Bihar School Examination Board will hold a workshop on question banks to prepare model questions in different subjects in view of the changed pattern of examination in the State. Dr Dhirendra Prasad, Chairman of the Board, said that this would be the second workshop on question bank. The first workshop was held in May.

The workshop would prepare model questions along with answers in Hindi, Urdu, Bangali, Maithili, Commerce and Domestic Science. Dr R.G. Mishra, Head of the Department of Measurement and Evaluation, NCERT will be the Chairman of the workshop. The question banks prepared at the workshop would be made available to the students and teachers to make them aware of the new pattern of examination.

Nagpur honours Shantaram

V. Shantaram, the famous film maker known for making purposeful films which contributed a great deal to social awareness was honoured with honorary D. Litt. degree by the Nagpur University at its 69th convocation held at Nagpur. Recounting his experiences for six decades in the film industry, Mr Shantaram said that his aim was not mere entertainment but also education through the powerful medium. Thanking the Nagpur University for the honour conferred on him, he said that such social recognition he had been able to achieve was necessary for inspiring not only him but others with a purposeful aim in the industry.

Calcutta to start correspondence courses

The Calcutta University will shortly start correspondence courses in humanities and commerce for the bachelor degree. Mr Sambhu Ghose, West Bengal Minister of Higher Education, made this announcement in Calcutta. He said that he had got the clearance for launching these courses from the Union Minister for Education, Mr V. Shankaranand and the Chairman of the University Grants Commission, Prof. Satish Chandra.

University Libraries in Karnataka

(*Continued from page 358*)

Proper planning and dynamic professional leadership are essential to translate into action many of the co-operative activities.

Hence this subject of resource sharing among the university libraries should receive priority from those who are concerned with the well-being of the university libraries. The Government of Karnataka must constitute a committee of experts who could work out detailed plans, estimate the cost involved and also explore the possible assistance that can be had from various national and international organisations.

Once such a plan of action is undertaken, it will be possible to establish and manage an effective information network among the university libraries in Karnataka.

(Courtesy : The Deccan Herald)

Conferences, Seminars & Workshops

July—September 1980

Date	Title	Place	Sponsoring Body
2—8 July	Materials Management	Bangalore	National Productivity Council
4—19 July	Cryogenic techniques I. Liquid nitrogen	Bangalore	Indian Institute of Science
4—19 July	Software engineering	Bangalore	Indian Institute of Science
7—8 July	Farm waste management	Chandigarh	National Productivity Council
8—12 July	Management of Small Scale Industry	Gauhati	National Productivity Council
14—18 July	7th National Seminar on Financial Management for Non-finance executives	Bombay	All India Management Association
14—19 July	Financial management for non-financial executives	Madras	National Productivity Council
14—26 July	Surface mining	Dhanbad	Indian School of Mines
14—28 July	Production diseases with special reference to Ruman Dysfunctions in bovines	Ludhiana	Punjab Agricultural University
14 July-2 Aug	Basic reservoir engineering	Dhanbad	Indian School of Mines
15—19 July	Tribology	Calcutta	National Productivity Council
21—26 July	Finance for non-finance executives	Delhi	Indian Institute of Public Admin.
21—30 July	Operations research for managers in mining industry	Dhanbad	Indian School of Mines
22—26 July	Corrosion prevention and control	Ahmedabad	National Productivity Council
22—26 July	Profit maximisation through cost reduction	Ahmedabad	National Productivity Council
23—26 July	Marketing information system for engineering products	Bangalore	National Productivity Council
24—27 July	Mid term symposium on electronics in industry	Chandigarh	Institute of Electronics and Telecomn Engineers
28 July-9 Aug	Intensive course on power electronics	Dhanbad	Indian School of Mines
29 July-8 Aug	Quality engineering and management	Calcutta	National Productivity Council
30—31 July	Management of ports	Delhi	All India Management Association
July 1980	Course in medical virology	Pune	National Institute of Virology
4—6 Aug	Management of sick units	Delhi	All India Management Association
4—6 Aug	New dimensions in industrial relations	Bombay	National Productivity Council
4—8 Aug	Productivity techniques applications to agro-based industries	Chandigarh	National Productivity Council
4—9 Aug	Communication and conflict management	Dhanbad	Indian School of Mines
4—9 Aug	4th programme on mining for non-mining executives	Dhanbad	Indian School of Mines
4—16 Aug	Modern developments in ceramic engineering	Dhanbad	Indian School of Mines
5—11 Aug	Refresher course on computer aided chemical process plants	Delhi	IIT
6—8 Aug	Applications of solar energy in industry and rural areas	Delhi	National Productivity Council
6—8 Aug	National workshop on stress corrosion cracking	Kalpakkam	Society for advancement of Electrochemical Science & Technology
16—30 Aug	School in design and anlaysis of equipment for pollution monitoring control	Bangalore	Indian Institute of Science
16—30 Aug	Vibration problems in engineering	Bangalore	Indian Institute of Science
16 Aug-6 Sept	21st Advanced Management Programme	Srinagar	All India Management Asssociation
18—20 Aug	Management information systems	Delhi	National Productivity Council
18—22 Aug	Management Information System and Computers	Bombay	National Productivity Council
18—23 Aug	Production planning & control	Bangalore	National Productivity Council
19—23 Aug	Industrial relations and productivity	Patna	National Productivity Council
22—23 Aug	Workshop on environmental pollution, monitoring and control in tannery	Kanpur	Indian Inst. of Chemical Engineers
22—27 Sept	Advanced seminar in marketing	Kathmandu	All India Management Association
25—30 Aug	Financial management for small industries	Calcutta	National Productivity Council
25—30 Aug	Geology for non-geology executives	Dhanbad	Indian School of Mines
Aug 1980	Symposium on electromagnetics	Bangalore	Inst. of Electronics and Telecommunication Engineers
Aug 1980	Symposium on modern trends in communications	Ahmedabad	Inst. of Electronics and Telecomm. Engineers
Aug 1980	Symposium on semiconductor materials and devices	Calcutta	Inst. of Radiophysics and Electronics, Univ. College of Technology
1—6 Sept	Combustion engineering	Dhanbad	Indian School of Mines
1—6 Sept	Microcomputer-based information systems design	Bombay	National Institute for Training in Industrial Engineering
1—12 Sept	Facilities planning and management	Bombay	Nat. Inst. for Training in Industrial Engineering
1—15 Sept	Space science technology and applications—an overview	Bangalore	Indian Institute of Science
1—21 Sept	Conference of young editors and journalists of the world	Delhi	National Youth Forum
3—6 Sept	Leadership and managerial effectiveness	Bangalore	National Productivity Council
3—12 Sept	Social cost-benefit analysis—workshop	Delhi	Indian Institute of Public Administration
8—19 Sept	Project management	Patna Bombay	National Productivity Council

Date	Title	Place	Sponsoring Body
8—28 Sept	Course on monitoring and evaluation	Delhi	IIT
10—12 Sept	Effective management of training	Mussoorie	National Productivity Council
10—12 Sept	Familiarisation Workshop on the programme of the International Crops Research Institute for the Semi-Arid tropics	Patancheru (A.P.)	ICRISAT
12—13 Sept	All India seminar on development of ship ancillary industry in India	Bombay	Institute of Marine Engineers
12—14 Sept	45th Annual Convention of the Indian Society of Soil Science	Karnal	Indian Society of Soil Science, Central Soil Salinity Research Inst.
14—27 Sept	Programme on advancement of management and productivity	Srinagar	National Productivity Council
15—20 Sept	Decision making	Delhi	National Productivity Council
16—30 Sept	Sound transmission in coastal seas	Bangalore	Indian Institute of Science
17—23 Sept	Improving office productivity	Bangalore	National Productivity Council
22—27 Sept	Achievement motivation for higher productivity	Bombay	National Inst. for Training in Industrial Engineering
22 Sept-1 Oct	Project management	Delhi	Indian Institute of Public Administration
22 Sept-4 Oct	Photogrammetry and remote sensing in Mineral exploration and mining	Dhanbad	Indian School of Mines
26—28 Sept	National Symposium on Utilisation of Agricultural and Forest Residues	Chandigarh	Indian Inst. of Chemical Engineers
Sept 1980	International Congress of writers and intellectuals	Patna	Readers & Writers International
Sept 1980	Symposium on electron devices	Pune	Inst. of Electronic & Telecommunication Engineers
Sept-Oct	Industries conference on paints	Hyderabad	Indian Standards Institution

Subject Index

Date	Title	Place	Sponsoring Body
Agriculture			
10—12 Sept	Familiarisation Workshop on the programme of the International Crops Research Institute for the Semi-Arid tropics	Patancheru (A.P.)	ICRISAT
7—8 July	Farm Waste Management	Chandigarh	National Productivity Council
12—14 Sept	45th Annual Convention of the Indian Society of Soil Science	Karnal	Indian Society of Soil Science, Central Soil Salinity Research Inst.
26—28 Sept	National Symposium on Utilisation of Agricultural and Forest Residues	Chandigarh	Indian Inst. of Chemical Engineers
14—28 July	Production diseases with special reference to Ruman Dysfunctions in bovines	Ludhiana	Punjab Agricultural University
Communication			
4—9 Aug	Communication and conflict management	Dhanbad	Indian School of Mines
Aug 1980	Symposium on modern trends in communications	Ahmedabad	Inst. of Electronics and Telecomm. Engineers
Economics & Finance			
21—26 July	Finance for non-finance executives	Delhi	Indian Inst. of Public Admn.
14—19 July	Financial management for non-financial executives	Madras	National Productivity Council
25—30 Aug	Financial management for small industries	Calcutta	National Productivity Council
14—18 July	7th National Seminar on Financial Management for Non-finance Executives	Bombay	All India Management Association
3—12 Sept	Social Cost-benefit analysis—workshop	Delhi	Indian Inst. of Public Admin.
Electricity and Electronics			
28 July-9 Aug	Intensive course on power electronics	Dhanbad	Indian School of Mines
24—27 July	Mid term symposium on electronics in industry	Chandigarh	Inst of Electronics & Telecomm. Engineers
Aug 1980	Symposium on electromagnetics	Bangalore	Inst. of Electronics and Telecomm. Engineers
Sept 1980	Symposium on electron devices	Pune	Inst. of Electronic and Telecommunication Engineers
August 1980	Symposium on semiconductor materials and devices	Calcutta	Inst. of Radiophysics and Electronics, Univ. College of Technology
Energy			
6—8 Aug	Applications of solar energy in industry and rural areas	Delhi	National Productivity Council
Engineering			
14 July-2 Aug	Basic reservoir engineering	Dhanbad	Indian School of Mines
1—6 Sept	Combustion engineering	Dhanbad	Indian School of Mines
22—26 July	Corrosion prevention & control	Ahmedabad	National Productivity Council
8—28 Sept	Course on monitoring and evaluation	Delhi	IIT
4—16 Aug	Modern developments in ceramic engineering	Dhanbad	Indian School of Mines

Date	Title	Place	Sponsoring Body
6—8 Aug	National workshop on stress corrosion cracking	Kalpakkam	Society for advancement of Electtrochemical Science & Technology & Reactor Research Centre, Kalpakkam
29 July-8 Aug	Quality engineering and management	Calcutta	National Productivity Council
4—19 July	Software engineering	Bangalore	Indian Institute of Science
15—19 July	Tribology	Calcutta	National Productivity Council
16—30 Aug	Vibration problems in engineering	Bangalore	Indian Institute of Science
Environment and Pollution			
16—30 Aug	School in design and analysis of equipment for pollution monitoring control	Bangalore	Indian Inst. of Science
22—23 Aug	Workshop on environmental pollution, monitoring and control in tannery	Kanpur	Indian Inst. of Chemical Engineers
Geology & Geography			
25—30 Aug	Geology for non-geology executives	Dhanbad	Indian School of Mines
Industry and Labour			
19—23 Aug	Industrial relations and productivity	Patna	National Productivity Council
Sept—Oct 1980	Industries conference on paints	Hyderabad	Indian Standards Institution
Sept—Oct 1980	Industry-wise conference in the field of surgical instruments and equipment	Jullundur	Indian Standards Institution
8—12 July	Management of Small Scale Industry	Gauhati	National Productivity Council
4—6 Aug	New dimensions in industrial relations	Bombay	National Productivity Council
4—8 Aug	Productivity techniques applications to agro-based industries	Chandigarh	National Productivity Council
Journalism			
1—21 Sept	Conference of young editors and journalist of the world	Delhi	National Youth Forum
Literature			
Sept 1980	International Congress of writers and intellectuals	Patna	Readers and Writers International
Management & Marketing			
22—27 Sept	Achievement motivation for higher productivity	Bombay	National Inst. for training in Industrial Engineering
22—27 Sept	Advanced seminar in marketing	Kathmandu	All India Management Association
15—20 Sept	Decision making	Delhi	National Productivity Council
10—12 Sept	Effective Management of Training	Mussoorie	National Productivity Council
1—12 Sept	Facilities planning & management	Bombay	National Inst. for Training in Industrial Engg.
17—23 Sept	Improving office productivity	Bangalore	National Productivity Council
3—6 Sept	Leadership and managerial effectiveness	Bangalore	National Productivity Council
4—6 Aug	Management of sick units	Delhi	All India Management Association
23—26 July	Marketing information system for engineering products	Bangalore	National Productivity Council
18—23 Aug	Production planning & control	Bangalore	National Productivity Council
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8—12 Sept	Project Management	Patna	National Productivity Council
8—19 Sept		Bombay	
22 Sept-1 Oct	Project Management	Delhi	Indian Institute of Public Administration
16 Aug—6 Sept	21st Advanced Management Programme	Srinagar	All India Management Association
Materials Management			
2—8 July	Materials management	Bangalore	National Productivity Council
Medicine & Public Health			
July 1980	Course in medical virology	Pune	National Inst. of Virology
Mining			
4—9 Aug	4th programme on mining for non-mining executives	Dhanbad	Indian School of Mines
21-30 July	Operations research for managers in mining industry	Dhanbad	Indian School of Mines
22 Sept-4 Oct	Photogrammetry and remote sensing in mineral exploration and mining	Dhanbad	Indian School of Mines
14—26 July	Surface mining	Dhanbad	Indian School of Mines
Research and Information			
18—20 Aug	Management information systems	Delhi	National Productivity Council
18—22 Aug	Management information system and computers	Bombay	National Productivity Council
1—6 Sept	Microcomputer-based information systems design	Bombay	National Inst. for Training and Industrial Engg.
Science & Technology			
4—19 July	Cryogenic techniques I. Liquid nitrogen	Bangalore I	Indian Inst. of Sciences
5—11 Aug	Refresher course on computer aided chemical process plants	Delhi	IIT
16—30 Sept	Sound transmission in coastal seas	Bangalore	Indian Institute of Science
1—15 Sept	Space science technology and applications—an overview	Bangalore	Indian Inst. of Science
Shipping			
12—13 Sept	All India Seminar on development of ship ancillary industry in India	Bombay	Institute of Marine Engineers
30—31 July	Management of ports	Delhi	All India Management Association

VIKRAM UNIVERSITY, UJJAIN

No. Dev/80/Estt/Advt/662 Dated : 11.6.80

Advertisement

Applications, on the prescribed forms available from the University Office on payment of Rs 5/- in cash or by M.O./I.P.O. payable to the Registrar. are invited for the following posts in the University Schools of Studies and Department of Library Science.

S.No.	Department	Number of Posts			
		Prof.	Reader	Lecturer	R. Fellow
1.	Physics	—	—	1	—
2.	Chemistry	—	1	3*	—
3.	Botany	—	—	3	—
4.	Zoology	—	2**	2	—
5.	Geology	—	1	1	—
6.	Mathematics	—	—	3£	—
7.	Statistics	—	—	1+	—
8.	English	1	—	—	—
9.	Hindi	—	—	2	—
10.	Sanskrit	—	—	1	—
11.	Economics	1	—	1	—
12.	Pol. Science	—	—	1	—
13.	Ancient Indian History, Culture & Archaeology	—	2	2=	1
14.	Library Science	—	—	1	—
	Total :	2	6	22	1

Note :-

* One post of Lecturer in Chemistry is temporary upto 6.10.81 but likely to continue and another post of a Lecturer in Chemistry is purely temporary upto 31.7.81.

** One post of Reader in Zoology is temporary for the time being upto 22.10.81 but likely to continue.

£ One post of Lecturer in Maths. is purely temporary upto 21.9.80.

+ One post of Lecturer in Statistics is purely temporary upto 3.3.81 but likely to continue.

= One post of Lecturer in A.I.H.C. & Arch. is temporary upto 6.7.81 but likely to continue.

PAY SCALE

(i) **Professor**—Rs. 1500-60-1800-100-2000-125/2-2500.

(ii) **Reader**—Rs. 1200-50-1300-60-1900.

(iii) **Lecturer**—Rs. 700-40-1100-50-1600.

(iv) **Research Fellow**—Rs 300-25-600

QUALIFICATIONS

(i) **Research Fellow**

(a) Atleast a Second Class Master's Degree of an Indian University or an equivalent qualification of a foreign University in the subject concerned.

(b) Knowledge of Hindi will be desirable

(ii) **Lecturers**

(A) (a) (i) A Doctor's Degree or published research work of an equivalent high standard; and

(b) (i) A Second Class Master's Degree in a relevant subject with at least 50% marks (B in the seven point scale) or an equivalent degree of a Foreign University and

N.B. : (While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded).

(ii) Atleast 50% marks at the Bachelor's Degree examination on the basis of which division is awarded at the Degree level by the University, and

(iii) At least 50% marks at the Higher Secondary/Intermediate/Pre-University examination, as the case may be.

Having regard to the need for developing interdisciplinary programmes, the Degrees in (a) & (b) (i) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate, as evident either from his thesis or from his published work, is of very high standard it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing the following qualifications may be recruited :

(B) (i) A Second Class Master's Degree in a relevant subject with atleast 50% marks (B in the seven point scale); and

N.B. : (While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded).

(ii) Two year's experience of research work or practical experience in research laboratory/research organisation; and

(iii) Atleast 50% marks at the Bachelor's Degree examination on the basis of which division is awarded at the degree level by the University; and

(iv) At least 50% marks at the Higher Secondary/Intermediate/Pre-University examination, as the case may be.

OR

(C) (i) A Master's Degree with First Class or Grade 'A' in relevant subject; and

(ii) At least 50% marks at the Bachelor's Degree examination on the basis of which division is awarded by the University; and

(iii) Atleast 50% marks at the Higher Secondary/Intermediate/Pre-University examination as the case may be.

Provided further that in the case of categories (B) and (C), a candidate will have to obtain a Doctor's Degree/M. Phil. Degree or have to his credit published research work of equivalent standard within 5 years of his appointment failing which he will not earn future increments until he fulfils these requirements.

N.B. : The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of Scheduled Castes/Scheduled Tribes candidates.

(ii) **Professors and Readers**

(a) (i) A Doctor's Degree or published work of an equivalent high standard; and

(b) (i) A Second Class Master's Degree in a relevant subject with atleast 50% marks (B in the seven point scale) or an equivalent Degree of a Foreign University; and

N.B. : (While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded).

(ii) Atleast 50% marks at the Bachelor's Degree examination on the basis of which division is awarded at the Degree level by the University; and

(iii) At least 50% marks at the Higher Secondary/Intermediate/Pre-University examination, as the case may be.

AND

(C) (i) In the case of Professors the experience of teaching of post-graduate classes shall be atleast 10 years and in the case of Readers the experience of teaching post-graduate classes shall be atleast 5 years; and

(ii) In case of Professors, evidence of candidate/s having been awarded a Doctor's degree under his supervision and in the case of Reader, atleast three years experience of guiding research.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published research work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

N.B. : The requirement regarding minimum percentage of marks shall be relaxed upto 5% in case of Scheduled Castes/Scheduled Tribes candidates.

It will be open for the University to consider the name of any eminent person distinguished in Scholarship who may not have applied for the post.

SPECIALISATION

Candidates for the post of Reader in Chemistry should possess the specialisation in Industrial Chemistry.

Candidates for one substantive post of Lecturer in Mathematics should possess the specialisation in Astronomy.

All appointments will be on probation for two years in the first instance except on the posts indicated as temporary. Superannuation age is 60 years. In addition to pay, the above scales carry dearness allowance, additional dearness allowance and the benefit of contributory provident fund (after confirmation) as per rules of the University in force from time to time. Higher start is possible to deserving candidates.

Scheduled Castes and Scheduled Tribes candidates will be given preference, if found suitable.

Applications complete in all respects and accompanied with Cross I.P.O. of Rs 7.50 p. for the post of Professor, Rs 5/- for the post of Reader and Rs 3/- for the post of Lecturer payable to the Registrar, Vikram University, Ujjain should reach the undersigned on or before **7th July, 1980**. The envelope containing application form, should be marked "Application for the post of Professor/Reader/Lecturer/Research Scholar in the School of Studies/Department in ——————. Separate application form is essential for each post.

Applications received after the last date or not on the prescribed form or without the prescribed fee will not be considered. Candidates already in service should apply through proper channel. Candidates called for interview will have to attend the same at their own cost.

The University reserves the right to fill-up or not to fill-up any post advertised and/or to call only selected candidates for interview.

REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

Advt. No. Aca. III/5/80

Applications are invited for the following posts :

I. SCHOOL OF INTERNATIONAL STUDIES

Centre for South, South-East and Centre Asian Studies

1. **Associate Professor/Fellow or Assistant Professor (Leave Vacancy).**

Associate Professor/Fellow

Essential Qualifications

(a) Consistently good academic record with at least a high second class Master's degree in any of the Social Sciences or its equivalent qualification from an Indian/foreign University;

(b) A Ph.D. degree or published work of an equally high standard relating to Sri Lanka Studies;

(c) About five years experience of teaching and/or research in the field of Sri Lanka Studies.

Desirable : Knowledge of Sinhalese.

Note: There is only one leave vacancy of an Associate Professor/Fellow till Dec. 31, 1980; in the event of none of the applicant being found suitable for appointment to the post of Associate Professor, the university may consider offering the post of Assistant Professor from among the applicants.

II. SCHOOL OF LANGUAGES

2. **Centre of French Studies**

Assistant Professor in French (Leave Vacancy)

Essential Qualifications

(a) Consistently good academic record with at least a high 2nd class Master's degree in French or its equivalent qualification from an Indian/Foreign University; and

(b) A Ph.D. degree or published work of an equally high standard.

Desirable: Knowledge of teaching French by Audio-visual method and some teaching experience.

Provided that in the case of Assistant Professors if the Selection Committees are of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualification prescribed in (a) above.

Provided further if a candidate possessing a Ph.D. degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Ph.D. degree or give evidence of research work of equivalent high standard within five years of his appointment, failing he will not be able to earn future increments until he fulfils these requirements.

III. SCHOOL OF LIFE SCIENCES

3. **Laboratory Technician Grade—III—two (one reserved for Scheduled Caste candidate)**

Essential Qualifications

Diploma or an equivalent degree in Electronics/Mechanical Engineering of a recognised Institution and having about three years experience in servicing and maintenance of scientific instruments.

Scales of Pay

1. Associate Professor/Fellow Rs. 1200-50-1300-60-1900.
2. Assistant Professor : Rs. 700-40-1100-50-1600.
3. Laboratory Tech. Grade III : Rs. 425-15-500-EB-560-20-700.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective position. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The Selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centre of Studies.

Normally appointment of Fellows is made on contract basis for a period ranging from one to three years.

Benefits of C.P. Fund-cum-Gratutity/G. P. Fund-cum-Pension-cum-Gratuty are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to SC/ST at the level of Assistant Professor.

For Laboratory Technician Grade-III

(i) Age limit 40 years; relaxable by 5 years in respect of candidates belonging to Scheduled Castes & Scheduled Tribes/Ex-servicemen/Physically handicapped candidates.

(ii) Upto 1% of the vacancies are reserved each for deaf, blind and orthopaedically handicapped, in Group C & D (Class III & IV posts).

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope (affixing Postage Stamps worth Rs 2.85) of 23cm x 10cm, size to the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-67, should reach him latest by **July 10, 1980.**

Candidates from abroad, applying for the faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their name, date and place of birth, marital status, nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates's professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

SAMBALPUR UNIVERSITY

JYOTI VIHAR : BURLA
SAMBALPUR
Corrigendum No. 9121/Estt. II
Dated the 14-6-80

In partial modification of this office advertisement No. 1983/Estt. II dated 7-2-80 and corrigendum No. 3078/Estt. II dated 21-2-30 the following be inserted as qualification for the post of Lecturer.

(V) Qualification (i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent foreign Degree with grade B+or 55% of Marks which may be relaxed in case of candidates holding a Ph.D. degree.

The last date of receipt of applications in tne office of the University at Jyoti Vihar is extended up to **7.7.80.**

Other terms and conditions remain unchanged.

B.B. Tripathy
REGISTRAR

UTKAL UNIVERSITY

ADVERTISEMENT
Advt. No. Estt. II(21-A)/10791/80
Dated 9-6-1980

Wanted a Chief Librarian for the Utkal University Parija Library, Vani Vihar, Bhubaneswar-4 in the scale of pay Rs. 1000-1530/- with the minimum qualification M.A. in First Class or 2nd Class with 55% marks or more in any subject along with diploma in Library Science from any recognised University and experience as a Librarian for 10 years in any public Library of some repute. For the specially qualified Chief Librarian the scale of pay Rs 1100-1600/- may be given. Last date for receipt of application is **21-7-1980.**

Five copies of application forms will be supplied to the candidates from the office of the undersigned in person on payment of Rs 5.35 paise or by post on receipt of a Crossed Indian Postal Order for Rs 7.85 paise payable to the Finance Officer, Utkal University, Vani Vihar, Bhubaneswar-4. No money order will be entertained for the purpose. Applications should be accompanied by attested copies of certificates, diplomas testimonials etc.

S.K. Panda
REGISTRAR

NOTIFICATION

Jawaharlal Nehru Technological University and Osmania University

Announce a Common Entrance Examination for Admission to the First year of B.E./B.Tech. Civil, Electrical, Electrical and Electronics, Mechanical, Electronics and Communication, Mining and Chemical Engineering courses and B. Arch. courses of study in their respective Colleges

1980-81 Session

1. **ELIGIBILITY**

(a) Candidates of Indian Nationality belonging to Andhra Pradesh or whose parents/accuses are working in Public Sector Undertakings, Universities, Andhra Pradesh State Government, Central Government or Quasi-Government organisations within the State of Andhra Pradesh and who have passed the two-year Intermediate Examination conducted by the Board of Intermediate studies, Andhra Pradesh with Mathematics, Physics and Chemistry as Optional subjects or any other examination recognised as equivalent thereto by the two Universities are eligible for appearance at the Common Entrance Examination for admission to the 1st year of the following courses:

(i) B.Tech./B.E. Civil Engineering
(ii) B.Tech./B.E. Mechanical Engineering
(iii) B.E. Electrical Engineering (O.U.)
(iv) B.Tech. Electrical and Electronics Engineering (J.N.T.U.)
(v) B.Tech./B.E. Electronics and Communication Engineering
(vi) B.Tech. Chemical Engineering
(vii) B.E. Mining Engineering
} 4 years duration.
(viii) B. Architecture — 5 years duration.

Admission to the above courses will be on the basis of merit in the Common Entrance Examination that will be conducted jointly by the two Universities.

(b) Candidates who have passed the qualifying examination compartmentally are also eligible.

2. The selection and admission to the B.E./B.Tech. Civil, Electrical, Electrical and Electronics, Mechanical, Electronics & Communication, Mining and Chemical Engineering courses of study under the Jawaharlal Nehru Technological University and Osmania University will be common and will be made by the Admissions Committee appointed by the two Universities on the basis of merit in the Common Entrance Examination to be held on Sunday 17th August, 1980.

3. **APPLICATION FORMS**

Application forms can be had from any one of the following :

(i) Principal, Osmania University College of Engineering, Hyderabad-500007
(ii) Principal, College of Engineering, Anantapur-515002
(iii) Principal, College of Engineering, Kakinada-533003
(iv) Principal, Nagarjunasagar Engineering College, Hyderabad-500488
(v) Principal, College of Fine Arts & Arch., Hyderabad-500488
(vi) Principal, Osmania University College of Technology, Hyderabad-500007
(vii) Convener, JNTU & OU Admissions Committee, Hyderabad-500038

on requisition, enclosing

(a) A Demand Draft on any scheduled bank for Rs. 10/- towards cost of application form payable at Hyderabad to Convener JNTU & OU Admissions Committee, Hyderabad. Money Orders, Postal Orders, Cheques or Cash will not be accepted.

(b) A self addressed envelope of size 25 x 12 cm. (9 in. x 5 in.) with postage stamps of Rs. 2.75 affixed.

4. Sale of Applications will commence from .. 1-7-1980
Last date for sale of Applications .. 26-7-1980
Last date for receipt of filled-in application forms either by post or in person .. 31-7-1980
Date of Entrance Examination Sunday 17-8-1980

5. Further particulars can be seen in the "Instructions to the Candidates" supplied alongwith the application forms.

6. All correspondence regarding Entrance Examination and Admissions shall be made to :

Convener, JNTU & OU Admissions Committee
C/o Jawaharlal Nehru Technological University
"Examination Cell"
7-1-619/A/3/2, Srinivasanagar East Colony
Hyderabad-500038.

Convener
ADMISSIONS COMMITTEE

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Psychology

1. Bhatia, Sati. A psychological study of the changing patterns of marriage and family institutions in Hindu society. Agra University.

2. Bhatnagar, Meenakshi. A study of children's problem solving and decision making strategies. University of Delhi.

3. Girija, P.R. A study of intellectual and non-intellectual factors in academic achievement of advantaged and disadvantaged students from professional colleges. Karnatak University.

4. Malik, Saroj. Personality correlates of real and ideal self-concept of teacher trainees. Agra University.

5. Nimkar, Bapurao Vithuji. Inter-personal perceptions of classes of professionals: A study of stereotypes. Nagpur University.

6. Sinha, Surat Pyari. Feeling of security and self-concept as factors in familial attachment. Agra University.

Sociology

1. Beliappa, Jayantni. A sociological study of the religious concepts of the Coorgs. University of Delhi.

2. Brejesh Chandra. Unemployed graduates of Agra: A sociological study. Agra University.

3. Gupta, Uma. Status and role of educated working women of Agra. Agra University.

4. Khan, Masood Ali Khan Mohsin Ali. Social change among the Muslims of Aurangabad City. Marathwada University.

5. Purushottam Das. A sociological study of an immigrant community in a metropolitan city: Sindhis in Kanpur. Agra University.

6. Rajwade, Krishna. Status of Muslim women in Indore City. University of Indore.

7. Rukobo, Andries Matenda. Land, class and dominance in North-Western India: Social structure, agrarian relations and change in a Muzaffarnagar village, Western Uttar Pradesh. Jawaharlal Nehru University.

8. Sati, Parma Nand. Retired people—their life style and problems: A study of retired people in the city of Udaipur, Rajasthan. Agra University.

9. Saxena, Urmila. A sociological study of Sansiya tribe of Uttar Pradesh. Agra University.

Political Science

1. Bakshi, Manhar J. Political ideas and institutions in Yajnavalkya Smriti. University of Indore.

2. Chopra, Monica. Right to property in India: A study in socio-economic justice. University of Delhi.

3. Kagalkar, Pratibha Chandrashekar. Nehru: A study in Indian socialism. Marathwada University.

4. Naqvi, Syed Qurban Ali. Socio-economic mobility and political participation: A case study of Amroha constituency. Jawaharlal Nehru University.

5. Ram Avtar. Organisation and working of Panchayati Raj in Gurgaon District, Haryana. Agra University.

6. Sharma, Chandra Prakash. Role of the opposition in the Indian Parliament, 1962-70. Agra University.

7. Sharma, Rajiv Lochan. Coalition Government in the states of Indian Republic: A critical study with special reference to U.P. Agra University.

8. Tripathi, Kapil Deo. Concept of lokniti in Sarvodaya philosophy. Agra University.

Economics

1. Bhattacharyya, A.B. Socio-economic impediments of economic growth in India. Agra University.

2. Joshi, B.H. Impact of green revolution on small and big farmers in Saurashtra with special reference to Dhoraji Taluka. Saurashtra University.

3. Patil, Jaykumar Fajgaunda. Level and composition of taxation in Maharashtra in the context of planned economic development 1961-62 to 1975-76. Shivaji University.

4. Rede, Arun Lata. Structure of profit rates in Indian manufacturing industries. M.S. University of Baroda.

Education

1. Aruna Rani. Psychological study of musically gifted girls at school and college level. University of Jammu.

2. Gangaiah, N. A critical study of English teacher education in Andhra Pradesh. Karnatak University.

3. Paintal, Iris Clara. Evaluation of microteaching and other recent innovations in educational technology. University of Delhi.

4. Parmar, Dolatsinh Naharsinh. A case study of Vallabh Vidyanagar as an educational complex with reference to special role of Dr B.D. Patel (Baikaka). Sardar Patel University.

5. Patel, Gordhanbhai Haribhai. An investigation to study the attitude of the teacher educators towards the programmes of non-formal education leading to life-long education in the state of Gujarat. M.S. University of Baroda.

6. Ray, Prafulla Kumar Sreechandan. Effect of various treatments on the acquisition of teaching skills through microteaching. M.S. University of Baroda.

7. Satapathy, Amulya Kanti. Self-actualization among teachers of higher secondary schools in Delhi. I.I.T., Delhi.

Commerce

1. Agarwal, B.K. Flow of capital incorporation enterprises (Private sector) in India since 1956. Agra University.

2. Bhagwat, Parasmal. Indore sambhag mein grameen rin grastata evam bandhak shram: Ek anubhaavashrit adhyayan. University of Indore.

3. Desai, Muktishanker Manchhashanker. Marketing of cattle and buffaloes in Gujarat. Sardar Patel University.

4. Jain, R.K. Analysis of financial statements of sugar industry in U.P. Agra University.

5. Murali, P. Financial management in co-operative and private sector sugar mills in Andhra Pradesh. Sri Venkateswara University.

6. Parekh, Ashok Kumar. Raipur sambhag mein niji kshetra ke loh evam ispat adharit pratinidhi udyog: Vikas evam sambhavnayen. Ravishankar University.

7. Somwanshi, Suryabhan Apparao. Impact of drought on co-operative agricultural credit in Aurangabad District. Marathwada University.

8. Wali, Basawantappa Mallappa. Export orientation in Indian economy during the plan period. Karnatak University.

Management

1. Bhatia, M.L. Profit centres, responsibility accounting and performance evaluation: A study of large industrial enterprises. University of Delhi.

2. Kumar, Amar Jit. A study of parameters affecting productivity in the Indian Railways. University of Delhi.

3. Sushma. Information system for investment decision in backward areas. University of Delhi.

HUMANITIES

Linguistics

1. Chaturvedi, A.K. Bhojpuri kee kriya sanrachana: Gorakhpur Devariya janpad mein boli jane wali boli ke sandarbh mein. Agra University.

2. Garg, Ramesh Chandra. A study of perception of English speech sounds by mono-and bilingual speakers of Hindi. University of Delhi.

3. Rama, M. Structural description of Tulu. University of Kerala.

4. Visalakshy, P. Development of the Sanskrit language during the period between the Mahabhashya and the Kashika. University of Kerala.

Literature

English

1. Bandhyopadhyay, Jiban Krishna. Dramatic writings of Wordsworth, Coleridge and Southey. University of Calcutta.

2. Biswas, Asha. Tennyson's romantic heritage. Agra University.

3. Khare, Avadesh Kumar. A study of the themes in the novels and short stories of Willa Cather as a clue to understanding her mind and artistic pre-occupations. Ravishankar University.

4. Koti Reddy, Kamjula. A critical study of the American drama from 1929 to 1939 with special reference to Elmer Rice. Nagpur University.

5. Lakhpati Lal. A sociological study of R.K. Narayan's novels. University of Gorakhpur.

6. Rajendra Singh. Art and ideas in the novels of Mark Twin. Agra University.

7. Sharma, S.D. Impact of scientific thought on Victorian fiction with special reference to the works of Charles Dickens, George Eliot, George Meredith and Thomas Hardy. *D. Litt.* Agra University.

8. Suryavanshi, Shankarrao Ramchandra. Themes and technique in the poetry of Dylan Thomas. Shivaji University.

9. Srihari Rao, J. Robert Nathan : A critical study. Ravishankar University.

10. Waghmare, Janardan Madhaorao. Problem of identity in the postwar American Negro novels with special reference to Ralph Ellision and James Baldwin. Marathwada University.

Sanskrit

1. Bhim Sain. A study of the concept of Stridhana in relation to the law of inheritance in Ancient India. University of Delhi.

2. Chaturvedi, Shiv Kumar. An etymological treatment of the philosophical terms in the commentaries of Sankara. University of Delhi.

3. Gupta, Sharda. Brahmananda and his Advaita Martanda. University of Jammu.

4. Jha, Medha. A critical study of the Tatwaprakashika of Jayatirtha. University of Delhi.

5. Kaushal Kumari. Jaidev ke Geet Govind ka sahityik drishti se adhyayan. Agra University.

6. Mehra, Rita. Upanishadon ke adhar per Brahm ka swarup. Agra University.

7. Sharma, Damodar Prasad. Shrimad Bhagwad Gita ke vaishnav bhashyon ka tulnatmak adhyayan. Agra University.

8. Shastri, V.K. Biswin shatabdi ke purvardhvarti pramukh sanskrit kavyon ka vivechanatamak adhyayan. Agra University.

9. Shukla, Bali Ram. Anumana-Pramana. University of Delhi.

10. Tandon, Santosh. Yudhisthiravijayam: A study. University of Delhi.

11. Tripathi, Kanti Swaroop. Chandkoshikam: Ek samalochnatmak adhyayan. Agra University.

12. Tripathi, Kashi Nath. Kalidas ke kavyon ke alankaron ka parisheelan. University of Gorakhpur.

13. Vijayan, K. Rasarnavasudhakara: A critical study. University of Kerala.

Hindi

1. Agarwal, Krishna. Agyeya ke katha sahitya ka shaileetatwik adhyayan. Agra University.

2. Bhardwaj, Madan Mohan. Adhunik Hindi-Marathi natakon mein yug-bodh. University of Delhi.

3. Bhargava, Nilima. Ashtachhap kavion kee darshnik vichardhara. University of Delhi.

4. Bhatnagar, Sushma. Nai kavita mein Prem sambandh, 1938-63. University of Delhi.

5. Chauhan, Veena. Dwivediyugeen kavya mein riti tatwa. Agra University.

6. Gupta, Krishna. Hindi ke upvakyon ka sanrachnatmak adhyayan. University of Delhi.

7. Gupta, Veena. Bhagwaticharan Verma ke upanyason kee shilp-vidhi. University of Delhi.

8. Jat, Ram Bux. Premchand aur Bharatiya kisan. Jawaharlal Nehru University.

9. Khanna, Harish Chander. Hindi ke swatantryottar upanyason mein pratik tatwa. University of Delhi.

10. Khare, Durgesh. Adhunik Hindi kavita mein prapt rupvadi prevrittiyon ka alochanatmak adhyayan. University of Gorakhpur.

11. Magotra, Bal Krishan. Tulsi sahitya mein Pauranik akhyanon ka viniyog. University of Jammu.

12. Maheshwari, Abha. Adhunik Hindi kavita mein vidroh ke swar. Agra University.

13. Manav, M.P. Chhayavadottar Hindi kavya mein ras: Kewal pragativadi kavya ke sandarbh mein. Agra University.

14. Mishra, Om Prakash. Hindi anchalik upanyason mein grameen chetna ka vikas. Ravishankar University.

15. Pant, M.C. Kumauni lok kathaon ka adhyayan. Kumaun University.

16. Parijat, Bharti. Chhayavadottar Hindi kavya mein bimb vidhan. Agra University.

17. Prabha. Kavya srijan kee prakirya: Pramukh samikshakon ke maton per adharit vivechan. Agra University.

18. Premchand, Rapaka Manohar. Age consciousness depicted in the novels and short stories of Krishna Chander. Andhra University.

19. Purohit, Shankarlal. Hindi aur Oriya mein Rama sahitya: A comparative study of Balram Das and Tulsi Das Rama katha. University of Sambalpur.

20. Rajput, Lata. Bundelkhand ke Ramkavya ka anusheelan. University of Saugar.

21. Sharma, G.C. Udaseen sant Nigmanand aur unka sahitya. Agra University.

22. Sharma, S.P. Braj lokgeeton ka vivechanatmak adhyayan. Agra University.

23. Sharma, Sudha. Shabd shaktiyon ke adhar per Ghananand ke kavya ka alochanatmak adhyayan. Agra University.

24. Shiledar, Darshansingh Darbarsingh. Maharashtra kee Hindi patrikaon ka itihas. Marathwada University.

25. Srivastava, Sarita. Adhunik kaleen Hindi samikshakon ke ras-vivechan ka vishleshan evam mulyankan. Agra University.

26. Thakur, Mahendra Kumar. Riti swachhand kaviyon Ghananand, Bodha evam Thakur ke kavyon ka tulnatmak anusheelan. Ravishankar University.

27. Toor, Dharam Pal. Hindi kahani mein adarsh aur Yathartha, 1935-50. University of Delhi.

28. Vijay Kumari. Nai kavita mein pracheen upakhyano ka prayog. University of Delhi.

Urdu

1. Abdul Hai. Life and works of Mohd. Ali Tabeeb. University of Delhi.

2. Ata Ullah. Contribution of Darul Musannifin to the development of Urdu literature. University of Delhi.

3. Kazi, Shaheen R. Urdu mein khwateen kee novel nigari azadi ke bad. Nagpur University.

4. Shahida Parveen. Urdu novel mein kirdar nigari. University of Kashmir.

5. Sujan Kour. Urdu adabi tanqeed mein Ghalib shinasi ka mutala. University of Kashmir.

6. Syed Peer Ali, Syed Sadique Ali. Taraqqi pasand afsana, 1936 to 1957 A.D. Marathwada University.

Bengali

1. Das, Pulinbehari. State and drama in Bengali, 1795-1947. University of Calcutta.

Gujarati

1. Panchal, Shirish Jagjivandas. Some basic problems in the criticism of poetry. M.S. University of Baroda.

Marathi

1. Kale, Akshaykumar Malharrao. Swatantryottar Marathi kavyateel pravah, 1947 to 1970. Nagpur University.

2. Kundap, Kanhaiyalal Baburao. Mahanubhav Panch Krishna Panchkrisna charitracha sampradaik aani vangmayeen abhyas. Shivaji University.

Telugu

1. Beena, N. A critique on Chalam. Nagarjuna University.

Fine Arts

1. Misra, Umesh Chandra. A study of tribal paintings and sculptures of Mandala Region. Indira Kala Sangeet Vishwavidyalaya.

2. Trikha, Rana. Blending of East and West in the paintings of Amrita Sher-Gil. Agra University.

Geography

1. Agarwal, R.K. A geographical study of the development of the sugar industry in upper Ganga Yamuna Doab. Agra University.

2. Bedi, Usha. Urbanization in Western Himalaya: Patterns, processes, determinants and consequences. Agra University.

3. Bhaduria, S.B.S. Farrukhabad District: A study in land utilization. Agra University.

4. Hemamalini, Bandary. Studies in ecoclimatology of Andhra Pradesh. Andhra University.

5. Pathak, Keshav Deo. Town country relationship in Mathura city region. Agra University.

6. Tripathi, M.P. Habitat, economy and rural society in the Pokharan Valley, Nepal. University of Gorakhpur.

History

1. Dubey, Gopal Narayan. Madhyakaleen Bharat mein chikitsa vyavastha 1000 isvi se 1700 tak. University of Indore.

2. Kulkarni, Sheshrao Ramrao. Radicalisation of mass politics in Marathwada, 1919-1947. Marathwada University.

3. Srinivasan, V. Last days of the Tuluva Dynasty, 1529-1567. Bangalore University.

4. Srivastava, Suresh Chandra. Medical sciences in Ancient India. University of Gorakhpur.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in AIU Library during June, 1980

EDUCATIONAL PHILOSOPHY

Best, David. "Free expression, or the teaching of techniques" *British Journal of Educational Studies* 27(3); Oct 79: 210-20.

Carson, A.S. "Two problems of educational theory". *British Journal of Educational Studies* 28(1); Feb 80: 20-33.

Okon, Wincenty. "All round education and development of the personality'. *Prospects* 9(3); 1979: 261-74.

EDUCATIONAL PSYCHOLOGY

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University News

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH JULY 15, 1980

Indian contingent for the Moscow Olympics with Prime Minister, Smt. Indira Gandhi, in New Delhi.

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K. D. Gupt
REGISTRAR

UNIVERSITY NEWS

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Editor : ANJNI KUMAR

Hundred Years of Science and Technology

Raja Ramanna

In any commentary on Indian science from a histrorical point of view, it is impossible not to make some references to the intellectual wealth contained in the ancient writings of this country.

By a series of accidents I chanced to read some of our 'Puranas' and I must say I was amazed at the sharp, prespective and questioning approach of the writers of these old works. They have everything that is required for developing a great scientific culture. It must also, however, be admitted that in these great writings themselves there are signs of decay, superstition and downright foolishness and we seem to have chosen the latter.

The Indian National Science Academy by its efforts in the past few years has shown that scientific tradition never actually died out of India and was in fact quite active even in the Muslim period and right up to very recent times. There is considerable literature on the mathematical contributions of India in the past but very few know of the contributions in chemistry, medicine, engineering and other aspects of technology.

What concerns me here is the background that existed in the 19th century in order to explain the quick absorption of science in the country in spite of its backwardness at that time.

Elite teaching centres are part of the Indian tradition and it is remarkable how this background proved a fertile soil for accepting modern science, as introduced by the West, in the 18th and 19th centuries.

Much has been said about the statutes of Lord Macauley on Indian education but nobody can deny that though the system was essentially to produce clerks, it gave a window to the West and it is for this reason that among the developing countries India ranks at the top in making science a part of its cultural system. One will, of course, have to make special mention of Prof. Mahendralal Sarcar and Father Lafont of St. Xavier College of Calcutta in starting the Indian Association for the Cultivation of Science in 1876. Their contributions made it possible for a large number of people to take part in the process of absorbing modern science as a part of our system.

Intensive growth

It should not be forgotten that in the 19th century modern science was itself developing in the West and was at a period of intensive growth. In the century earlier than this, mechanics and optics had been understood but nothing was known of thermodynamics and electromagnetic theory. It is astonishing to us that only 150 years ago thermodynamics as we know it today did not exist and the entire phenomenon of electromagnetic propagation was yet to be discovered and applied. This took place only towards the end of the last century. In this sense the coming of science to India synchronised with the great developments of classical physics in West. It is not therefore surprising that many great Indian scientists started to emerge on the scene from towards the end of the last century.

As is known to most people, towards the end of last century, J.C. Bose started work on electro-magnetic propagation at a time when electro-magnetic theory was new and it seems amazing that somebody should have been working on such problems at a time when the subject was only just emerging in Europe.

J.C. Bose must have been very much a product of his age. He was brought up in a Hindu atmosphere with all the enthusiasm of a new renaissance. His subsequent work on the behaviour of plants which can be rightly termed as biophysics is an outcome of this atmosphere.

It is difficult to assess the work of J.C. Bose and perhaps what he will be mostly remembered by now is that he started work on electro-magnetic theory so early in its development and for his contributions to fine instrumentation in India. The sensitive Crescograph is a forerunner to the modern oscilloscope and is a delight to see in Calcutta. His own creation, the Bose Institute, has undergone many vicissitudes but I believe it is now setting down to emerge as a powerful institution and is in a process of rejuvenation.

Curious

The other scientist who paved the way to considerable scientific activity, but himself took no part in it in any organised way, is Srinivasa Ramanujan. His life is a curious one and reflects the social atmosphere of the time in the Madras Presidency. What has always surprised me about the Madras Presidency is that though the people there have lived under British influence for a long period of time, they have never lost their own basic traditions. It has always been a strange mixture of a Missionary education, conservatism and an intense love for discussing abstruse subjects. This is the atmosphere which produced Srinivasa Ramanujan.

The phenomenon of Ramanujan resulted in the development of a very active school of mathematics at the University of Madras. It attracted many young men and the School of Mathematics under Vidyanatha Swamy produced many excellent mathematicians. Unfortunately due to problems of caste and anti-Brahmin feelings, the school did not get sufficient encouragement and the Madras University can no longer be counted as a great centre of mathematics. In fact, a lot of these intellectuals migrated to the Tata Institute of Fundamental Research (founded in 1945) at Bombay which is now probably the most active centre of mathematics in India.

The Science Department of the Calcutta University was the first to make important contributions to science in all its aspects during the early part of the century. Much of the credit for the creation of this atmosphere goes to Asuthosh Mukherjee, perhaps the greatest Vice-Chancellor this country has produced. He went out of his way to get bright young people and encourage scientific research at its best. The great works of Saha, Bose and Raman were carried out in this atmosphere.

By the time I get to know M.N. Saha, he had already passed hid prime and he has been inducted into the political scene. We must note that it was he who brought to the attention of Jawaharlal Nehru the need for national planning, particularly scientific planning.

Though a giant in physics, I could see that organisation was not his strong point. He had taken on specific physics projects which required much engineering and technological but he did not seem to have fully appreciated its role in scientific research and could therefore not quite succeed in establishing a wide based programme of scientific development. He later became a severe critic of our Atomic Energy programmes though he was very much interested in its exploitation. His contributions to astrophysics are well known but he will be measured by his many good students and the Saha Institute of Nuclear Physics which he started in Calcutta in 1945.

Professor S.N. Bose was a person who could not be categorised in any way. He was a lone worker and there were very few people who can call themselves as a Satyen Bose student. He was an extremely lovable man, wanting to do a lot for science on an organisational basis. He, however, did not have the gifts for this kind of activity and took strong and ad hoc positions on issues just depending on how he felt at that moment.

In commenting on the history of science during the last 100 years there is no doubt that C.V. Raman stands out not only as an outstanding physicist but as a man who tried to build a strong independent Indian School of Physics. He was deeply subjective, had strong views and was impatient of all things. He probably believed that without an impatient urge to do something one can never succeed.

He was essentially an experimental physicist but of the highest order and had to face many problems of 'house keeping' which he seems to have done exceedingly well in his days at Calcutta. He had the gift of attracting the best students from all over the country and they were all highly devoted and loyal to him. His students were paid very small salaries, lived together in small rooms and had to work in very unfavourable conditions. Yet they gladly spent their early active life working with the great Professor.

Simple things

His spirit of research gradually spread from Calcutta to other parts of India. He had demonstrated that from simple things great achievements are possible and his early work on musical instruments is still a classic piece of work. After the Raman effect his work on diffraction of light by ultrasonics is considered his last important work. At Bangalore he had more facilities and people collected around him from all parts of India. The unbelievable self-confidence which he had in himself and which he was able to infect his students with, created a new approach to science in the country.

However, his methods had several drawbacks and were not suitable for the type of research required in the late 1930s and after the war. He believed too much in working with the simplest of things and did not appreciate the value of a collective approach to research.

But there is no doubt that his tenure in the Institute of Science at Bangalore was the golden age of its activities, but even here he felt he was hampered by an outmoded administrative system.

Of the many students that Raman produced, there is no doubt that the most outstanding was

(*Continued on page 392*)

Priorities in Educational Planning

Food Science & Technology
Information Service
7 AUG 1980
C.F.T.R.I. MYSORE

Raghunath Safaya*

The dawn of independence ushered in a new era of national reconstruction. Reconstruction began in the fields of agriculture, industry, commerce, technology and education. It was firmly realised by our national leaders that education has a vital role to perform in bringing about prosperity of the country. Planning in the field of education was considered as the first step to national prosperity. In fact even before 1947, Sargent Commission, while planning for educational development, quoted the famous lines of Disralli, viz 'upon the education of the people the fate of this country depends.' And it is true not only for U.K. but also for any country. Consequently planning for educational development began with the 1st Five Year Plan.

The educational field of the country is vast indeed. At the beginning of the 1st Plan, there were hundred and one problems needing solution. But on account of limited resources available the educational planners could not but devote their attention to the major and the pressing problems, and leaving solution of the remaining problems to future. Limitation of resources lead to one prerequisite of planning, i.e. fixing priorities. The Planning Commission fixed some priorities. It stressed the following aspects of education for implementation and development :

1. Inadequate educational facilities.
2. The top-heavy structure of education with only 32.2% of direct expenditure on primary schools.
3. Great disparity among the states in matters of educational opportunities.
4. Uneven distribution of educational facilities between urban and rural areas.
5. Lack of balance between provisions of facilities for different sections of the society.
6. Large scale wastage.
7. Absence of adequate facilities for technical and vocational education and scientific research.
8. A very large percentage of untrained teachers.
9. Unsatisfactory scales of pay and conditions of service of teachers, and
10. Economic handicaps to poor but able students at the University level.

It will not be out of place to make an appraisal of the priorities fixed by the Planning Commission. But before we actually make an appraisal, let us discuss how priorities should be fixed. There are various points of view regarding the mode of fixing priorities. I may mention three such modes.

The first mode is fixing priorities according to the *time periods*. There are certain tasks that need immediate action and some which can wait. In this way we can easily have three plan periods viz. 4th, 5th and the 6th Plan. The second mode is fixing priorities according to the *level*, national, State or local. Each of the three controlling authorities of education have their own functions and spheres, and prerogative will be limited to their own spheres. The third mode is according to the *task*, namely, scheming, financing and implementing or executing. We have to fix priorities for planning various tasks in education, which may or may not need financing. There are a number of tasks in education which need human resources rather than material resources. It is regretable that the only planning that has been done with regard to education has been financing, i.e. allocation of funds for various sectors, irrespective of the fact that no preparation was made for the utilisation of the funds, with the results that funds were either wasted during the five plans, or were unutilized. Statistics reveal that roughly 10% of the funds were not utilized at all. The major task, therefore is implementation of the educational programme rather than spending funds.

Now a pertinent question arises here. Even if we take into consideration the above nine dimensional priority, design, what should be the actual basis of fixing priorities. I may mention the gollowing five major criteria.

The first is the FOUNDATIONAL basis. Whatever sector of education is the very foundation the educational programme, that must be given the first priority. Which sector is foundational, that will be discussed a little later. But foundational basis is to be considered the first. Unless the foundation is strong no multistoreyed building can be built over it. The second is the *structural* basis. As a total structure of the building is to be planned soon after the foundation, so the present structure of education must be improved and priority must be given to this aspect. The third is the basis of *neglected sphere.* There might have remained certain important sectors totally neglected even after improving the total structure. The fourth is the *maintenance basis.* Whatever has been constructed has to be maintained properly and consolidated. The fifth is the *improvement* and *decorational basis.* Timely improvements in all the educational spheres need to be made, and deterioration checked. The last is the *expansional basis.* The existing construction, well-founded, well-designed, well-maintained and well-improved upon can be expanded.

Now let us study the five year plans from the point of view of the priorities fixed. We find that inspite of the rapid expansion of education and completion of a number of projects, a number of glaring defects are discernible now at the end of the five plans.

The first defect is the *absence of long term plan-*

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ning. Each plan had its immediate targets. But the five plans together do not make one comprehensive whole. It would have been better if we had prepared 25 years plan, and subdivided the same in five parts. In this respect we realize the wisdom of Sargent Commission who tried and out-lined educational development over a period of 40 years.

The second defect is the *tempo of expansion*. We become too much enthusiastic in implementing the directive of Article 45 of the Constitution, and tried to hurry down compulsory education everywhere. We could not imagine the consequences of compulsory deduction drive. The unprecedented expansion at the elementary stage, created pressures from below mounting up in University sectors. First the elementary education was the minimum, but then the secondary education become the minimum and higher education the optimum. Still larger expansion took place in the sector of vocational, technical and professional education, and it became difficult for the State Governments to cope up with the same.

The third defect was *quantity at the expense of quality*. We paid our attention more to quantity than quality although much of the finances were not involved in some sectors promoting quality, e.g. preparation of text books, revision of syllabi, in service training and instructional improvement. We tried to convert each school into basic pattern by merely providing a non-recurring grant, and the system failed.

The fourth defect is vide and shallow planning. We have taken up almost every item of education and tried to do something of everything, with the result that the meagre resources available to us were diluted, being spreadover a large area. This comprehensive Planning has caused shallowness in the educational achievement. Hence there is the need of selected sectors approach. There are some sectors where total achievement is needed immediately, e.g. improving pay-scales of teachers, teacher education, textbook production, etc.

We are now in a position to test our achievements at the end of the five plans, and see whether the priorities that were fixed by the Planning Commission have culminated into fruitful results. We can take up all the three points of view in fixing priorities, as mentioned above viz time periods, levels and tasks. From the point of view of time periods, we find that no comprehensive plan for 25 years was prepared by the Planning Commission. Each plan was detached from the others. There was no scheme of fixing priorities separately for each plan.

Taking the second point of view into consideration, viz the different levels, we find that no planning was made at the local programmes including

(i) provision of seven years of effective primary education,
(ii) adding one year to the school stage, and
(iii) vocationalisation of secondary education,
(iv) from 1985 onwards, emphasis should be laid upon the development of higher education and research.

Now let us make an appraisal of the priorities fixed by the commission and weigh their decisions on the criteria mentioned above. So we take the first basis namely the foundational basis of fixing the priorities. In this connection we shall have to ask the question, what is the foundation of any educational programme—the buildings, the equipment or the human material. Of these teacher/headmaster/lecturer/inspector/administrator is the very foundation and the nucleus. Education without teacher is impossibe as hospital without doctor, court without judge, city without town planner, bridge without engineer a farm without a farmer and so on. The first priority in the entire educational planning should be providing suitable staff, training the staff, and giving them adequate salaries. It is known to all that till recently salary scales of teachers were shameful, and the service conditions are still bleak, discouraging any intellectual to join the profession. Teaching has become the last resort of the unemployed. The Education Commission has made a detailed survey of the emoluments in different professions, and finding the ridiculous position of the teaching profession in comparison with other professions, it made full recommendations for improvement of the teachers lot. But both the Central and the State Governments must pay first attention to this sphere of education. In the 9 dimentional chart of priorities teacher education occupies the first position. It must be given the first priority, in the 6th Plan. Once the grades become at par with the grades of other professions, slight improvements will be needed in the 7th and the 8th plan. Teacher education and pay scales of teachers should be the entire responsibility of the Union Govt. It is clearly known by now that majority of the States are not prepared to share financial responsibility of implementation of the scheme prepared by Indian education Commission. If postponed, it will be detrimental and suicidal for education. Once you decided the foundational basis as the first basis or determining priority you cannot shut your eyes to those aspect of educational planning. Majority of the privately managed institutions are not able to finance the schemes, without Government grant.

The second basis is *structural*. We must complete our entire structure of education from elementary education to university. Here we find that priority should be given to elementary education, then to secondary education and lastly to University education. I feel that during the past five plans we have had enough of expansion in the elementary fields. Now is the time for qualitative improvement and consolidation. During the next plan, the percentage of school-going children in the age group 6-11 would go up from 78.5 to 93.1 and in the age group 11-14 it would go up from 32.2 to 47.4. The goal of free and compulsory education for all children can be expected to be achieved by 1986. Our planners have been too much enthusiastic about reaching the goal earlier, with the result that elementary education has suffered qualitatively. Our second priority should therefore be improvement of elementary education. In the qualitative improvement we shall have to exclude building and equipment from this expenditure, as the responsibility of providing buildings which cost for no less than 800 crores shall have to be shifted to the local sector. The local bodies must remain highly active during the 6th plan, and must provide funds for non-teacher items of primary education such as building, equipment, text books, uniform mid-day meals, conveyance to the pupils etc. Expenditure on teachers, inspection, supervision, preparation of textbooks and administration should be borne by the State. Centre should have the least responsibility in the sphere. Expansion should take place only through phased programme suggested by the Commission.

Our educational structure cannot be complete unless we improve secondary education which is even now the weakest link in the educational ladder. Here our attention should be drawn to vocationalisation so that 50% of the pupils at the end of the 8th class directly enter the technical and the vocational fields, as suggested by the Commission. Herein I do not agree with the Education Commission in spending money on the conversion of pre-university to higher secondary. That will tantamount to dismantling the one and constructing the other. The existing arrangements may continue till we can find funds for purposes other than improvement programme. Improvement in secondary education is needed in the sphere of guidance, textbook and evaluation. Other items can wait. Diversification of courses and multipurpose system has no meaning without the provision of guidance. There is immediate need for 2000 counsellors for 2000 higher secondary schools in the country, and the number will grow along with the number of schools. I do not agree with the Education Commission that one counsellor may be appointed for ten schools. I want priority to be given to the guidance programme so that during the next few years, 2000 councellors are trained at the guidance centres in the states. Why not to depute one teacher from each secondary school and complete the task? This should be done at the State level in the 6th Plan, and implemented first of all. As for textbook production is concerned, it needs brains rather than finances and hence the scheme should be implemented forthwith at the central level. The same about training teachers in the methods of evaluation. At the college stage, no expansion scheme is needed to be given any priority. What is needed is the improvement of standards not through finances but by effective guidance, supervision and administration. Many of the problems like students unrest and indiscipline can be solved by effective administration. Increasing working hours, and working days in the year, strengthening tutorials and remedial classes and introducing many methods beside the lecture method do not need finances, and hence can be implemented at the State level forthwith. No new universities need to be opened. I feel an outlay of about 200 crores as provided for university education could be controlled and the saving utilised in vocational and technical education.

Our third basis of priority is equality and provision for the neglected spheres. Herein I feel, pre-primary education, girls education, education of the backward, education of the handicapped and health education are predominantly neglected spheres. These items have not been given the priority these deserve. The Commission has been vocal about advanced centres of research, increased emphasis on research in various sciences, cultural programmes and social education but I feel that the neglected sectors of education as mentioned above need to be given the first priority. Higher education and research should be given the last priority, though not neglected as these are not of foundational value.

I may thus summarise the schedule of priorities.

1. Improvement in salary scale of teachers and in teacher education.
2. Qualitative improvement in elementary education.
3. Vocational education, guidance, textbook improvement and evaluation at the secondary stage.
4. The neglected sectors of girls education, training of women teachers, education of the handicapped and the backward.

Before I conclude, I would like to mention the greatest of the great priorities not only for education but also for national reconstruction, and that is family planning. Our population has been increasing at the rate of 3% per annum, with the result that the student population also has been rising almost at the same rate, effecting the rise in enrolment increasingly educational expenditure. With the present rate of growth of population, enrolment drive shall have to be made stronger, so as to keep pace with the rise on population. It will obviously mean exhausting our financial resources for the sake of better enrolment at a better speed, which we may not be able to bear. The only remedy is to check the birth rate through family planning. The Indian Education Commission has made a comparative study of the educational implications of these assumptions of population growth and birth rate. The assumptions are—(i) high assumption i.e. more than 50% (ii) medium assumption i.e. 50%, and (iii) low assumption i.e. very low birth rate. In accordance with the three assumptions, the Commission calculates the variation in the per capita income. In high assumption, it will be Rs. 781.4 under medium assumption it will be Rs. 931.6 and under low assumption Rs. 1010. The Commission assumed that the total national income is 1,80,000 million in 1966, and it may increase at the rate of 7% per annum over the next 20 years. Our enrolment drive shall have to be geared to the national income and rise in population. It is only with the low rate of population growth that we can raise the national income and spend properly on education. □

University Education in India : Past and Present

P. N. Laha*

Education has been one of the pathways towards man's ascent from the simians to Homo sapiens, involving a very long past. While unfolding the past, I have kept in view the remark of Radhakrishnan that "History records the stages of man's education" and Robert E. Lee's conclusion: "It is history that teaches us to hope".

University education is a component of the total system of education. Hence, for a comprehensive approach, I have considered it appropriate to include some facets of education in general as well.

"Etymologically, the word education means just a process of leading or bringing up." Sociologically, "it implies attention to the conditions of growth", which connotes that education is a necessity of social life. As social life is a continuous process, so, therefore, is education. Stemming from these would be the fact that education is one word, but many things.

The philosophy of education of a country is determined by the ambit and content of contemporary knowledge in its various spheres and facets and the prevailing social milieu, and is influenced by the country's traditions. "A chain is only as strong as one of its links, and tradition may be likened to a chain in which every generation is a link." So should be the educational tradition of a country—a link between every generation, though the system of education of an age will exemplify the general ethos of that age.

As Dewey remarks: "Various epochs of the past have had their own characteristic struggles and interests. Each of these great epochs has left behind itself a kind of cultural deposit, like a geologic stratum. These deposits have found their way into educational institutions in the form of studies, distinct courses of study, distinct types of schools." Our cultural deposits—as enshrined in our traditions—must be utilized as a resource for the present—reasserted in terms consonant to our present needs and in the light of new discoveries. Simultaneously, it needs to be highlighted that university education is undergoing a development which is quite extraordinary in terms of both the extent and the nature of the change.

Our traditions of university education from ancient India

"Education is no exotic in India. There is no country where the love of learning had so early an origin or has exercised so lasting and powerful and influence." Ancient India encompasses a very long period of nearly twentyfive centuries, roughly divided into three periods, broadly termed as the Vedic period, the Buddhist period, and the post-Gupta period. Universities in ancient India can be traced back to the 7th century B.C. Takshasila, Nalanda, Vikramsila, Valabhi, Banares and Kanchi—to mention only a few of them—were great universities. Some of them had attained international reputation.

University education in ancient India used to be a joint venture between the teacher, the taught and the society. It is well documented in the following Upanishadic invocation :

सहनाववतु
सहनौ भुनक्तु
सह वीर्यं करवावहै
तेजस्विनावधीतमस्तु
मा विद्विषावहै ।

(Let us—preceptor and pupil—be protected together, let us be able to maintain ourselves, may our studies be radiantly effective, and let us be free from mutual jealousy).

Universities in ancient India were not universities as a university is defined today. They were residential centres of learning, where preceptors and pupils lived together under the common disciplines of the body and the mind, as well as in harmony with Nature. They possessed a deep awareness of our oneness with Nature. Their joint pursuit was directed towards the acquisition of knowledge in its various facets and the sedulous realisation of two maxims: "know thyself" and "Be thyself". The preceptor's role was more in what he shared with his pupils than in what he gave to them. "Permeating all physical, emotional and intellectual activities, there was an atmosphere of spiritual search in which pupils imbibed spiritual education without conscious effort..

Universities in ancient India had no fixed curricula, nor degrees were conferred by them. The student and the teacher—not the curricula for learning—were the principal elements in the educational programme. The purpose of a university was to study and teach all the more important branches of advanced learning. The teachers adverted to the supreme value of personal instruction. It was in the pattern of a traditional sequence, which was described in metaphysical language as "Guru Sishya Paramparya". It involved what in the words of a philosopher could be described as "the invisible molecular forces that work from individual to individual". This was perhaps the reason for our

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lawgiver in the Mitakshara including in the list of heirs the disciple and the Guru.

The great teachers of that age enunciated the ideals of education thus:

युवा स्यात् साधुयुवाध्यायक:
आशिष्ठौ द्रढिष्ठौ बलिष्टः ।

(Let the young man emerging from his pupilary condition be an Adhyayaka—a diligent student, as Asishtah—a well-disciplined being, Dridishtah—firm of will, and Balishtah—physically strong). What better ideals of education can we enunciate today?

Convocations used to be held at the end of the university education. Convocation addresses have been delivered from the days of Taittiriya Upanishad onwards—the ninth Anuvaka of which reads as follows :

सत्यं वद । धर्मं चर ।
स्वाध्यायान्मा प्रमदः ।
कुशलान्न प्रमदितव्यम् ।
भूत्यै न प्रभादितव्यम् ।
स्वाध्यायप्रवचनाभ्यां न प्रमादितव्यम् ।

("Speak the truth, follow the path of righteousness, do not abandon your studies, adhere to the path of prudence and prosperity and always continue to learn and to teach.") What more wise counsel can be enjoined on the students while they are emerging into the world of life and activities on the convocation day of any university of today?

During the Buddhist and the post-Gupta periods, the concept of higher education had only a shift of emphasis. So there was little change in the philosophy of education during these two periods, but the demand for higher education had increased, which necessitated organizational change, resulting in its institutionalization.

The values contained in our ancient traditions of education are basic and fundamental. They are for all ages and for all times, because they are basic and fundamental and have very deep and strong roots, having had been nurtured through the weathers of many centuries.

The foregoing review of our ancient traditions of education reminds one of the following words of Tenanyson: "Knowledge comes, but wisdom lingers..." Our universities of the present must utilized the wisdom bequeathed to us by our ancient traditions of education. The aims of education must be not only to impart knowledge but to develop wisdom as well.

During the medieval period

During the medieval period, consequent to the transferrence of Islamic cultures, great changes occurred in India. Education then was not a social duty; it was mostly a personal or family affair. Arabic was the medium of Islamic education. And Persian was studied as an accomplishment of culture. Madrasas, which were primarily theological institutions, imparted higher education. Several of them taught specialized branches of learning. Some of them had university status. Great fame had been attained by some of the Islamic centres of learning. Aside from them, there existed the University of Navadwipa in Bengal and the celebrated schools of Madura, Banaras, Ujjain and Kanchipuram.

During this period, the demand for the ancient system of education had decreased considerably, consequent to the time and due to the paucity of financial support. Nevertheless, a remarkable advancement of that period was the production of works in Sanskrit and the development of Hindi and many regional languages. *Pari · passu* with them, "the teachings of Ramanand and Kabir were manifestations of a philosophy and a language, which combined Hindi, Arabic and Persian elements". As Kabir remarks, "the two systems of education flowed in parallel streams and did not interpenetrate except in the case of a few rare individuals". High esteem and veneration were accorded to learning and erudition. The "Emperor's taste was", however, "the barometer of the then literary atmosphere."

Islamic higher education was mostly intellectual. It inculcated the habit of right thinking and the right use of words. It also stressed that intellectual eminence must not make one arrogant and that one must develop humility. During that period, "The ideal was a man who was master of all subjects and so able to appreciate the opinions of specialists in any branch; not so one-sided in his development, through having spent so much time on one subject, that he is ignorant of all others." This ideal carries great wisdom, and particularly so, in the present era of the growth and proliferation of specialization.

Western education

The western or modern system of education was introduced in India by Christian missionaries. Education received scant attention till the introduction of the "educational clause" in the Charter Act of 1813, whereby the East India Company agreed to provide a sum of not less than a lakh of rupees in each year, to be applied, *inter alia*, for "the revival and improvement of literature and the encouragement of the learned natives of India, and for the introduction and promotion of the knowledge of the sciences among the inhabitants of the British territories of India."

Macaulay's Minute of 1835 was the most important milestone toward the establishment of western education in India. As Ronaldshay says in his book entitled "The Life of Lord Curzon", Vol. II: "The revolutionary change of policy, under which a system of Western education had been set up under the auspices of the Government, dates from the year 1835, when Lord Macaulay's famous Minute decided once and for all the controversy decided once and for all the controversy which had been gathering force between the Orientalists, who stood for the existing order, and the Anglicists, who urged the introduction of a Western System." He further says that "while it had to be admitted that the system had been responsible for some remarkable results during the seventy years of its operation it was clear that it had developed some serious defects." In the same context, Kabir remaks: "Instead of building up a system from the bottom by introducing widespread mass education, an attempt was made to build education from the top. These universities themselves touched only a microscopic minority of the people, but since a university degree was a sure passport to profitable employment in those early days, the influence of the universities was for more widespread than their numbers would warrant." But, as he further remarks: "One must not overstate the case—One must admit, however, that the western education has had a remarkable effect in loosening social prejudices and creating resilience and flexibility in the Indian mind."

Since independence

"The achievement of India's independence hastened the need for a "complete and comprehensive enquiry into all aspects of university education and advanced research in India," as it was imperative for the country to lose no time in remoulding her educational policy as one of the first essential steps in her national progress."

There are many landmarks towards the restructuring of university education in India. A few of the recent ones are the University Education Commission (1948-49), headed by Dr. S. Radhakrishnan, establishment of the University Grants Commission in 1953 and the Education Commission (1964-66), under the chairmanship of Professor D.S. Kothari. As the Report of the Education Commission states: "In broad terms, the functions of the universities in the modern world may be said to be : to seek and cultivate new knowledge, to engage vigorously and fearlessly in the pursuit of truth, and to interpret old knowledge and beliefs in the light of new needs and discoveries." Considerable thoughts are being given and multidimensional endeavours made towards the reform of our university education.

Reform of our university education

History teaches us that human institutions require periodic reform for redesign and readjustment. Education is one such institution. Reform of university education is being necessitated by determinants stemming from advances in the knowledge of science and technology, changes in social philosophies, and new economic forces. University education cannot be out of touch with the life around it. As Chakravarti has said, "No university has ever remained for long out of touch with the life around it and stayed great." In the same context, the following words of Sir Eric Ashby are an important pointer: "If the University repudiates the call to train technologists, it will not survive; if it repudiates the cultivation of non-practical value, it will cease to merit the title of University."

The present era is an era of explosion of knowledge, which involves learning and relearning. It cannot be met too successfully by increasing the quantum of time allotted to formal education. Neither so, by converting the system of university education into what can be described as "the beehive model,"——in which "the total system perfects itself as the individual is steadily dwarfed." It could be met with, at least partly, by introducing what may be called "Educational weaning"—a process which places increasing emphasis on independent learning by the student rather than on instruction imparted by the teacher. The system must also provide ample scope for individual fulfilment, which is central to all education.

Vis-a-vis the foregoing, it would be relevant to highlight that "Education and instruction refer to complementary aspects of bringing human beings to maturity and adulthood. The first is the process of developing the person, of bringing out its intellectual and emotive qualities, its powers of self-expression, its capacity for service to itself and to others; while the second must be considered primarily as the process of imparting the information required for understanding the world and keeping alive therein." There is, however, no dichotomy between education and instruction. Instruction imparts knowledge. And knowledge can be gained only through knowledge. But "Depth of understanding must not yield place to breadth of knowledge."

University education is higher education. It has to be horizonal, as well as vertical. That would give it a wider dimension, and indeed, a deeper one. As Schumacher remarks. "Education can help us only if it produces 'whole men'. The truly educated man is not a man who knows a bit of everything, not even the man who knows all the details of all subjects (if such a thing were possible): ... He will not be in doubt about his basic convictions, about his view on the meaning and purpose of his life." In essence, a truly educated man is one who is adequately instructed, who has developed into an integrated personality, realises his intellectual responsibility and who possesses the notion of human dignity.

There is a great increase in the number of students seeking university education. It is a global phenomenon. "The root causes of this increase", as Perkins states, "are to be found in the requirements of modern technological society. The need for trained or even semi-trained manpower is unending" Notwithstanding the incalculable value of university education, as Ramaswami Aiyar has said, "greater concentration is undoubtedly necessary on the positive and practical sides of education." And "Since education is a social process", there have to be bilateral feedbacks and a state of symbiosis between education and society.

We have now a number of universities, "but" Ramaswami Aiyar has suggested, "one would prefer that each of these Universities were individual not only in tradition and background but individual in its studies and research. If each University devoted itself to some special subject or group of subjects suited to its locality, or the history, circumstances and aptitudes of the people whose interests it serves, we shall be able to do more in the aggregate than is possible at present, with much less expenditure of money and energy." But our universities should be not only all-India in character, they should be international in scope as well—through "what is styled academic mobility" so that teachers and students of one university can visit and take part in the activities of other universities—with mutual gains, and developing broader horizons for acquiring knowledge.

The universities of the world, despite their differences, share some common problems, Perkins, in his paper entitled "Five Crises of the World's Universities", discusses them under the following heads: 1. that of numbers (of students entering higher education), 2. that of finance, which stems directly but not necessarily from the crisis of numbers, 3. the relevance of the university curriculum, 4. the crisis of the new priorities, and the fifth is the new scepticism that denies the possibility of objective, rational thought. While Schumacher adds another dimension, as he says that "Education cannot help us as long as it accords no place to metaphysics. Whether the subjects taught are subjects of science or of the humanities, if the teaching does not lead to a clarification of metaphysics, that to say, of our fundamental convictions, it cannot educate a man and, consequently, cannot be of real value to society."

The very substance of university education should be a powerful creative and transforming principle. The social product of university education will be the measure of its utility, while the cultural product will be the measure of its creativity. The quantity, quality and vitality of university education will be determined by the yields of these two products. And to gain these objectives, there has to be a proportionate balance of the humanities, social sciences, sciences, and technology in the university curricula. "The time is ripe", as Ghali remarks, "for bringing the scientist and the humanist together again... They must form their students to this unified outlook, where in the human values are the foundation of society, and whereby the social purpose derived from these values becomes the responsibility of science and technology as much as of the social sciences and the liberal arts".

Our values of university education need to be renewed. And "they are to be sought in a considerable change in which we are all involved--and most of us actively—in the way we live and the demands we make on our existence, and in our values, i.e. what we consider to be of value and, indeed, our notion of what value is itself." We must find new solutions that will preserve our old values. And we must remember with reverence all men and women down the centuries who have thought and sought to create a comprehensive system of university education, which would be productive, creative and having a moral order. In the words of Gardner, "...The honour due them is not diminished by the fact that what they tried to build was... falsified by others, nor by the fact that what they built was right for their time but not for ours, the structure of values we build today will also outlast its usefulness. But the impulse to build it is sacred."

Epilogue

Reform of our university education is not simply an academic matter. Everyone of us shares a responsibility toward it, as university education has its influence, at first, on individuals, but in the end on whole societies.

We must define our university education and plan accordingly. "The problem of planning for the future", as Moore remarks, "it probably more pertinent in the field of education than in other areas of human endeavour. Fundamentally, education is designed to prepare young men and women to become worthly members of the society of the future. Hence, we must plan carefully so that we may not be charged with educating people for a world that does not or will not exist."

Stemming from all of these "is the broader question: What is the purpose of a university education? Is it occupational, intellectual, moral or social—or some subtle combination of these?" The answer is to be found in the vision of Tagore—which is documented in the following words of his... our education should be in full touch with our complete life, economical, intellectual, aesthetic, social and spiritual; and our educational institutions should be in the very heart of our society connected with it by the living bonds of varied co-operations. For true education is to realize at every step how our training and knowledge have organic connections with our surroundings." □

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Problems of Undergraduate Courses

S. Abdul Kareem*

It is unfortunate that collegiate education has suffered enough neglect so far as the restructuring of the syllabus is concerned. There is hardly any innovation, much less diversification in the course as well as the curriculum. Even in some established institutions the students but have limited options to choose from. The restrictions are sought to be imposed on grounds mainly financial and not academic. The recent directives from the Collegiate Directorates and Education Boards 'freezing' the subject combinations do not permit much looking over the academic barricades. With information' doled out in water-tight compartments, the inter-disciplinary approach so thoughtfully mooted gets scuttled at the undergraduate level.

Student counselling has degenerated to mere form-filling and we have no one who can present an interconnected approach, if not an integrated one at this level. For instance, the students offering Economics as a Core Subject are not told about the importance and relevance of Mathematics at the undergraduate level with the result that the students are handicapped at the higher level when they are called upon to study 'Econometrics'. The divorce between Sociology and Psychology is almost complete and its potential is realised when the students go to reputed institutes of social work.

It is needless to suggest that college teachers should have adequate scope to update their knowledge before it gets outdated by attending Summer Workshops and Courses. In service facilities are lamentably lacking for college teachers so much so their teaching is more often repetitive and not innovative. Of late, open book system of examinations is thought of without taking into account the analytical approach required of examiners or papersetters. With such systems, a resourceful examiner should pose questions involving analytical thinking, which otherwise would lead to lifting of passages from permitted books. Even this would prove a great handicap to the examinees as the management of time is of prime importance.

Education has had its full swing from job-orientation to job-alienation—the former is forced as a sure remedy to our present ills and the latter as directly contributing to the forgotten ideals of liberal education. The college stage as the 'preparatory pause' is surprisingly more relevant in a different way from that of H.G. Wells as the alumni are more often found simultaneously knocking either at the doors of employment exchanges or those of the matrimonal bureaus !

The concept of 'quality: institutions' as suggested by prof. K. R. Srinivasa Iyengar appears to be a varient of the much-discussed 'autonomous' institutions and this in its wake, may create a two-tier system of quality and non-quality institutions, which may inadvertently result in a kind of 'caste' system in education. On the contrary, educational experimentation and not educational adventurism, should be given a fair trial in a few select institutions attached to the NCERT or SCERTs. 'The Experimental College' by Alexander Meiklejohn published in 1932 records an experiment in liberal education made at and authorised by the University of Wisconsin at Madison. With the approval of the Advisers of the University and with a body of students this experiment was tried with a view to examining 'the content of study', the 'methods of teaching' and the 'determining conditions of Undergraudate liberal instructions'. The following findings of Dr. Meiklejohn from this experiment are electrifying:

> "This closeness of connection betwen the character of a society and the character of its education cannot be too strongly stressed. Schools and colleges are not something apart from the social order to which they belong. They are that order trying to prepare its youth for participation in its own activities. And a society can only teach the hopes, the knowledge, the values, the 'beliefs which it has'.

The drift of our modern life is but a reflection of the absence of a positive drive in our educational system with the result that society has incurred a progressive debility, if not a disease, of consciousness and of powers of coordination and control. Modern conditions make it inevitable for specialisation and sophistication to co-exist with education. In the words of Dr. F.R. Leavis, our urgent task is "to explore the means of bringing the various essential kinds of specialist knowledge and training into effective relation with informed general inteligence, humane culture, social conscience and political will". This task of synthesizing specialist knowledge may be too high a goal for the colleges. But a knowledge of this goal is highly imperative to the college teachers.

(*Courtesy* : *The Hindu*)

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CAMPUS NEWS

Kidwai's advice to Bihar VCs

Dr. A.R. Kidwai, Chancellor of Bihar Universities, while addressing the meeting of the Vice-Chancellors held in Patna under the auspices of the Inter-University Board said that the universities should make all efforts for proper utilisation of the Government grants and to streamline the working of the accounts sections of the universities. He urged the Vice-Chancellors to get the up-to-date audit of the accounts done immediately. In future utilisation certificate should also be submitted to the Government regularly. Dr. Kidwai emphasised the need of training of staff of accounts section in different universities which would be of great help in reconstruction of previous accounts and proper maintenance of current account. With regard to the teachers and other staff working against unsanctioned posts in different universities, the Chancellor asked the universities to examine how far these appointments could be regularised. He appealed to the teachers for their cooperation in creating proper academic atmosphere in the university campus.

Dr. Kidwai said that many of the academic problems concerning the universities were not being properly attended to for want of academician Registrars. He expressed the view that it would be better to have Registrars from the academic side so that they have adequate orientation. He wanted the universities to take special care of maintenance of existing buildings. He expressed the hope that with the commencement of the next session, hostels, common rooms and other buildings would be renovated. In order to clear the backlog of university examination the Chancellor expressed the view that there could be two or three examinations for the students of previous sessions and the students may be given the option to appear at any of these examinations. On the question of problems created due to increasing number of private students he suggested for holding separate examinations for them. He felt that in the present situation it would be better to award Bachelor pass degree to all the students completing their prescribed courses and the universities should be concerned with the conducting Bachelor Honours course and Master examinations. He wanted that all these matters may be considered by the Academic Council of different universities. He disapproved the idea of giving average marks in those papers in which students walk-out from the examinations as the universities have no authority to award marks in any paper in which there has been no examination.

The Chancellor also mentioned that there had been allegations that undesirable elements take shelter by virtue of their being students in the university or colleges. He wanted that the present system of admission on the basis of merely the marks and not the antecedents should be replaced and to start with admissions in postgraduate classes should be on the basis of competitive test and interview. He hoped that this system would help in eliminating admissions to academically poor and undesirable elements in the university since the attitude of the students can be known from interview. The Chancellor felt that there was no dearth of talents in Bihar and teaching in the university would improve by admitting right type of students.

After the Chancellor's address, the meeting of the Inter-University Board was held under the chairmanship of Dr. S.P. Sinha. The meeting was attended by the Education Commissioner, the Vice-Chancellor of Magadh University, the Vice-Chancellor of K.S. Darbhanga Sanskrit University, the acting Vice-Chancellor of L.N. Mithila University, the Financial Adviser of Bihar University, Dr. D.N. Sharma, Chairman Hindi Granth Academy and Dr. G. P. Sinha of Patna University. The Joint Secretary in the Education Department and the Financial Adviser to the State Government were also present in the meeting.

It was decided that in order to clear the pending certificates and degrees which have accumulated in the universities for the last several years, the Inter-University Board should frame draft statutes enabling the universities to issue degrees within six months from the date of declaration of results. If the degree of any student of previous year when there was another Vice-Chancellor, is to be issued, it will be signed by the Vice-Chancellor who is in office when the degree is being issued. The Board also decided that no private permission should be given for any examination or for any subject in which there is no teaching in the university. For the Master's examination a private candidate shall be required to attend regular classes for three months. The jurisdiction of the universities for granting private permission should be limited to the jurisdiction of university concerned and not to the whole State of Bihar. No private candidate should be admitted to the university examination unless there has been some screening by way of their passing at the test examinations. On the question of introduction of three-year degree course under 10+2+3 pattern of education the matter has been left to the Academic Council of universities to discuss the matter and send its opinion to the Board for further consideration.

PAU's new building for soils department

The Department of Soil Sciences of the Punjab Agricultural University moved into its massive new building built at a cost of Rs 60 lakhs and over a time span of five years.

When Hissar Campus was a part of the PAU, the Soils Department was mainly developed there. The small section at Ludhiana was meant only to teach undergraduates. When Hissar became a separate University in 1970 the Soils Department at Ludhiana also began to grow. Soon the staff increased and several fellowships came from ICAR, UGC and Atomic Energy Commission but there was not sufficient room to work in either for the staff or for the fellows. A study team of ICAR recommended the construction of a new building for Soil Sciences, which has now been completed. The national level work on micronutrients in soils and plants is also housed here since the all-India co-ordinated project on this subject is located in this University. There are 123 teachers in the Department in the rank of Assistant Professor, Associate Professor and Professor. It is imparting instructions to 750 undergraduates, 40 M.Sc. and 30 Ph.D. students. Many of the students are from other universities and from foreign countries.

Contrary to popular belief, Punjab agriculture is based on poor soils. These have developed on alluvium brought by fast rivers Ravi, Beas Sutlej and Ghaggar. These are predominantly coarse in texture with sandy loam as the dominant textural class and poor in fertility. There are substantial areas affected by salinity, alkalinity drought and water erosion. The necessary technology to make these soils perform better than the best in the country is the work before the department of soil sciences.

It is the opinion of the experts that with the application of optimum amounts of manures and fertilizers, crop yields can be doubled in the not too distant a future. For this they want a large number of soil testing laboratories to be set up. Of the 16 nutrient elements that are considered essential for plant growth, only 5 are presently considered deficient in the Punjab soils. These are nitrogen, phosphorus, potassium, zinc and sulphur. But blanket recommendations of fixed quantity of a certain fertilizer over large areas of land is not proper particularly in view of the recently increased costs of fertilizers.

It is for this reason that the Vice-Chancellor, Dr Amrik Singh Cheema, recently issued an appeal to farmers through the University's widely circulated Punjab magazine Changi Kheti that they should go in soil tests more vigorously. Information on fertility status of soils is essential for this purpose. Variations in fertility occur even in adjoining fields. These are caused by differences in soil texture, cropping, history, management, etc. Punjab has 10 million acres of land under cultivation. If each acre is to be soil-tested every five years, two million samples have to be tested every year. The present capacity is only to test 1.7 lakhs i.e. less than one-tenth.

Microcomputers : A technology forecast and assessment

Since the advent of the first stored-program electronic computer in the 1940s, computer technology has undergone rapid and continuous change. During the 1950s transistors replaced earlier vacuum tubes as the basic logic elements in such machines, and in the 1960s transistors were replaced by integrated circutis, in which many transistors, resistors, and capacitors are formed on a single crystal of silicon. With each technological development, computers have become smaller, faster and less expensive. Improvements have been measured in orders of magnitude and have been rapid, and the combination of increased functional capability and decreased functional cost has led to an increasing proliferation of computers in a variety of applications. During the 1950s and 1960s, most designs were oriented toward the development of large, high-speed, highly centralized computers in applications ranging from general computation to telephone switching. The impact on society in general was significant but subtle.

By the early 1970s, integrated electronics had developed to the point where the number of electronic components that could be integrated on a single chip of silicon was several thousand. This level of integration was sufficient to allow complete processors for calculators and small computers to be integrated on a single silicon chip measuring typically 3 to 5 mm, on a side. The term *microprocessor* was quickly applied to these new devices, and as technology evolved still further, permitting significant amounts of memory to be included on the processor chip, the term *microcomputer* was applied to these still more densely integrated systems.

The introduction of microprocessors and microcomputers represents an important turning point in the development of digital computers. The availability of extremely small, inexpensive, computers having significant processing power and versatility has allowed stored-program control and data processing to be extended into even the smallest electronic instruments. Solid-state integrated electronics, led by microcomputers, is now having a substantial impact on many diverse fields, ranging from industrial process control to health care and transportation. Computers are now becoming decentralized, with many dedicated microcomputers replacing larger centralized and time shared machines. Portable calculators are perhaps the most visible example of this computing revolution, but in spite of their anticipated effects on education and computation, they are relatively unsophisticated examples of the present technology.

The development of technology for large-scale system integration continues at a rapid pace, with the number of components that can be integrated on a single chip doubling nearly every year. If these developments continue very far into the future, few fields of human endeavour will remain untouched by the micro-computer. The pace of past developments makes it essential that future progress be anticipated so that informed policy decisions can be made and to ensure that the maximum benefits from the technology can be realized.

Madras orientation course in English language

The present standard of English has gone down mainly due to the fact that teaching of English is imparted only in higher classes. The ideals of liberal education are on the way out and not enough emphasis is given to Humanities. An orientation course in English was conducted by the Madras University at the World University Centre at Madras. The aim of the course was to introduce the participants to the new techniques of Teaching and Testing. Emphasis was laid on the development of language skills. The ability of the participants to understand, speak, read and write the language was enhanced.

The old method of teaching and testing depended heavily on lectures, dictation of notes and testing the memory power of students rather their language skills or creative talents. It was a passive affair in which the teacher was all important and the student was treated as a lifeless receptacle to receive whatever the teacher chose to pour in. This method had been adopted for all these years in educational institutions. The conditions have still changed with the passage of time and there is an urgent need to meet the needs of new society and to revise the aims and methods radically. The aim today is to cultivate basic skills. Towards this end the individual needs of students should be examined. Not all students are of the same level and their requirements are different. Hence the need for teaching which recognise the difference in the abilities of students. There should be room for remedial work. Teaching has to be student-oriented. It should ensure maximum student participation in the process of learning. Textbooks should be treated in such a way as to develop in students abilities of independent reading and writing rather than conveying the content. All this implies a great deal of planning and guided composition work. Examinations should be directly related to these aims and there should be questions testing every one of the skills distinctly. No student should be allowed to pass merely because of memorisation or his familiarity with texts or guides. The new scheme is the fruit of deliberations by the Board of studies over a period of one and a half years. Draft proposals were sent to all colleges in the university area. The Board considered the various suggestions and finalised the proposals. But the success of the scheme depends on the teachers.

The participants were advised to keep their eyes and ears open, see the soundness of the scheme for themselves and do their best to make the scheme a success. Group discussions, demonstrations and a workshop on designing question papers were also conducted for the participants who came from the colleges scattered all over the State of Tamil Nadu.

World Bank doubles lending for education

The World Bank has almost doubled the lending for education to developing countries from 6.4 billion dollars during 1975-78 to 11.58 billion dollars for 1979-83. Announcing its new policy for educational lending, the Bank said while it would provide assistance to countries in project preparation and sector analysis, the form will gradually change from direct responsibility to guidance.

According to the sectoral policy paper of the World Bank, its lending objectives would be physical expansion of schools, curriculum development, production of learning materials and improvement of internal efficiency. The Bank's emphasis will vary from country to country. In lending to low income countries, the emphasis will be on the development of low cost basic education programmes to meet the minimum needs of school age children and uneducated adults.

The Bank's priority in middle income countries will be the development of skills to meet the needs of increasingly sophisticated economies. Measures to improve the internal efficiency will be stressed in all countries. The Bank will support studies and plans of countries that seek to develop, balanced systems of education and will extend its assistance to different forms of higher levels of education. Most of the assistance of the Bank in providing opportunities in basic education for school age children will be concentrated on increasing or upgrading institutions and physical resources.

To improve the efficiency in learning the Bank will support all projects involving curriculum development, preparation and production of instructional materials. It would support the general pre-employment training for labour market and continue project-related training. The Bank will review mechanisms for providing general secondary education at reduced costs and consider funding exploratory projects to assess their feasibility. It will continue to support higher level education and training and provide assistance to technological infrastructure such as laboratories for applied research and consulting engineering organisations. It will increase its support for software components that complement building and equipment and pay more attention to teacher training when new curricula are developed.

Training course for rural development officers of State Bank of India

A Training Course in Modern Agricultural Technology and Effective Communication for

Rural Development Officers of State Bank of India was held at the Communication Centre of the Bidhan Chandra Krishi Viswa Vidyalaya.

The Officers were trained in recent advances on production of field crops, fruits and vegetables, management of soils, water management and dryland farming, plant protection, animal production and animal health, inland fish production, processing and curing of fish, sericulture, agricultural economics and farm management, modern trends in agricultural extension, communication of farm information and strategy on repayment of agricultural loans. Study tour, field visits and film shows were also held.

Twenty eight Officers from eleven districts of West Bengal and Calcutta attended the course. This was the first of a series of four such courses to be held in 1980-81. It was organised by the Field Extension Wing, Bidhan Chandra Krishi Viswa Vidyalaya in collaboration with the State Bank of India. The training course shall be useful to meet the challenging professional needs of the Rural Development Officers.

UPSC personality tests to continue

The Union Minister of State for Home Affairs, Mr P. Venkatasubbiah, assured the Lok Sabha that the Government would make every effort to see that the backward and neglected sections of the society got facilities to compete for higher posts in Central Services. The Government was in complete agreement with the members who complained that the prized posts in the bureaucratic set up had been the monopoly of a small section of the population. The imbalance would be corrected. The weaker section of society which by force of circumstances did not have the best education particularly those in the rural areas and the scheduled castes and scheduled tribes would be brought up to the level of those better placed.

The minister referred to the nine training centres set up for the scheduled caste and scheduled tribe candidates appearing for engineering and non-engineering Central Services examinations besides coaching centres in the States, and said that the government was constantly reviewing their adequacy. He ruled out the complete elimination of personality tests for the various examinations conducted by the Union Public Service Commission.

PM wishes all success to Indian contingent

Prime Minister, Mrs. Indira Gandhi, expressed the confidence that India will return with laurels from the Moscow Olympic Games. Addressing the members of the contingent at her residence Mrs Gandhi said India still have a long way to go in world standards in physical fitness. As an example, she said, in tennis Indians manage to reach the semi-final stage in tournament only to lose there.

In the present world in which fitness standards are going higher and higher, one way to start was to impart training from the childhood itself. My "very best wishes for your success", she added.

Earlier, the President of the Indian Olympic Association, Mr Bhalindra Singh, introduced the contingent members to the Prime Minister and assured her that they would do their best to keep up India's prestige.

Patna to revive moderation system

Patna University is considering a proposal to revive moderation system of question papers which was abandoned after 1975. Previously there used to be four members on the moderation board, two external and two internal. But the practice was stopped as a result of alleged leakage of question papers by some of the members. Attempts had been made to revive the system for quite some time but it could not be implemented so far. The Vice-Chancellor of the University, Dr Ramavtar Shukla said that the matter would be discussed in the Academic Council and he would try to ensure a fool-proof guarantee so that the system could work properly.

Examination innovations at Bhavnagar

With a view to streamlining the examination system, the Bhavnagar University has decided to allow the 'failed' students to keep terms in the next higher class with the help of remedial programme arranged by the university. It has further decided that no punitive measures would be taken against student caught using unfairmeans in the examination. He would however be given an opportunity to reappear in the supplementary examination to be held after six months to improve upon his previous performance. The university feels that the students need proper counselling, guidance and proper feedback in order to give them confidence and security.

The university also proposes to start a Learning Resource Centre. The main objective of the Centre would be to prepare learning material and remedial programmes for undergraduate students. The Centre will also work as Counselling Centre for the university students. It is felt that the innovative steps taken by the university in guarding the developmental process of students will ultimately create confidence in higher education. The university will carefully watch this new experiment so that new technology of teaching-learning structures could be evolved.

Shillong centre of CIEFL conducts refresher course

The Central Institute of English and Foreign Languages regional centre located at Shillong conducted an Intensive Refresher Course for high school teachers of English from Assam and Mizoram. Welcoming the delegates to the course, Mr V.D. Singh, Officer-in-Charge, said that teacher training should go hand in hand with reform in syllabus, teaching materials and examinations.

The course comprised (i) written English and grammar; (ii) spoken English; and (iii) principles and skills of teaching English as a second language.

The course in written English and grammar included lectures and tutorial classes in grammar as well as the teaching of it. The idea was to explicate grammar as it applied to the written and formal variety of English. Wherever applicable, attention was drawn to the ways in which the formal variety differed from the spoken one. The course in spoken English included a great deal of practice in transcription and the production of sounds. Listening being as important as speaking, the participants were required to listen to recorded versions of several of Shakespeare's plays and some well known poems. All the recordings were professionally made and exposed the participants to different varieties of English.

Rural development

The N.S.S. Unit of Roorkee University has prepared a detailed plan for the overall development of the Majra village and submitted it to Jamna Lal Bajaj Foundation, Bombay. The University will assist the villagers in getting loans from the State Bank for Dairy & other small scale pursuits. Dr. Mansoor Ali (Co-ordinator), Sri J.B. Sharma, (full time Rural Development Officer) visited the village alongwith (Bank Manager), Sri B.M. Sant & Sri Prasad (Field Officer) & explained the schemes to the villagers, so that they may take maximum benefit from this new scheme.

Rs 10 lakhs for youth adventure programmes

The Ministry of Education and Cultute has set apart Rs 10 lakhs this year to encourage youth to undertake activities like mountaineering, trekking, sailing, raft-expedition, cycling, skiing and skating.

Under its scheme for promotion of adventure among the youth, financial assistance is given to individuals, groups, voluntary organisations, educational institutions, Nehru Yuvak Kendras, State Governments and Union Territory Administration.

The budget allocation of Rs 9 lakhs was utilised last year in assisting 90 adventure programmes.

The objective is to foster among the youth a spirit of adventure and team-work apart from providing a creative outlet. The accent is on providing opportunities to non - student youth, particularly of rural areas and those belonging to the weaker sections of the society.

Bombay plans new study courses

The Bombay University is to expand its whole range of courses. Prof Ram Joshi, Vice-Chancellor, while addressing the silver jubilee celebrations of the Bombay Insurance Institute said that he would be willing to introduce certain diploma courses in insurance. The university would examine the scope for similar courses at the undergraduate and postgraduate levels in other areas as well. Prof. Joshi was in favour of diversification of courses. He agreed with the general criticism that the present day educational pattern was quite irrelevant to the needs of the society. He said the proper management of plus two stage could help overcome this lapse to some degree.

Osmania builds a film library

Osmania University has planned a film library to help supplement teaching. The university has recently acquired about 200 educational fiims on various subjects including environmental studies, regional and urban development and open university education. It is proposed to lend these 16mm films to colleges for screening from the coming academic year. The films will be of great help to the adult education centres functioning under the NAEP of the university.

Madras endowment in Sanjay's name

An endowment of Rs. one lakh is being made to Madras University by the Tamil Nadu Congress Committee to provide an annual scholarship in the name of Shri Sanjay Gandhi for higher studies in aeronautical engineering.

JNTU entitled for UGC grant

It is reported that the University Grants Commission has recognised the Jawaharlal Nehru Technological University, Hydrabad to receive assistance from the central sources under section 12A, of the UGC Act. It may be recalled that JNTU was established on October 2, 1972 and was the first technological university of its kind in the country. Uptil now, the State Government was bearing the entire expenditure of this university which had three engineering centres and a college of fine arts and architecture. It has the jurisdiction all over the State of Andhra.

Mr N. Shanmukha Rao, Vice-Chancellor of the university, said that the university sought Rs nine crores assistance from the UGC. With the recognition of the university by the UGC he was expecting more funds for developing its activities such as construction of hostels, etc. The university is receiving from the State Government a grant of Rs two crores in the Sixth Plan period and a sum of Rs 35 lakhs has already been sanctioned for the construction of hostel buildings for the engineering colleges at Anantapur, Kakinada and Hyderabad.

Rao presents report on engineering education

Prof. B. Ramachandra Rao, Vice-Chairman, University Grants Commission and a member of the Review Committee on Post-graduate Education and Research in Engineering and Technology, presented the report to Shri B. Shankaranand, Union Education Minister. The twenty member committee which included representatives of industry, educational institutions and Government departments was appointed by the Government of India in June 1978 to review the progress made in Postgraduate education and research in engineering and technology and suggest measures for further development. The Minister pointed out that education, especially scientific and technical, had to be relevant to the prevailing social needs and therefore needed to be continously reviewed. He assured the committee that the present government had the political will to give effect to those of the recommendations which may be necessary for the economic development of the country.

Bangalore communication degrees become popular

The Department of Communication of Bangalore University has developed various courses in communication / journalism/ and allied areas. The two degrees—Bachelor of Science in Communication (B.S.) and Master of Science in Communication (M.S.) would be available to the students for different kinds of careers. Many students who have gone out of the portals of this department have easily fitted into the media world having secured jobs in newspaper offices, advertising agencies, public relations departments and some as teachers in other universities. The department would soon be acquiring a sound studio, a photo-lab and a CCTV unit. It also plans to acquire printing lab facilities.

Hundred Years of Science and Technology

(*Continued from page 378*)

K.S. Krishnan. In some ways he was just the opposite in personality to Raman. He was gentle, cultured, well read, broadminded and very tolerant. I recall on several occasions how Krishnan as Member of the Atomic Energy Commission influenced by his quiet persuation a stronger personality like Homi Bhabha on various decisions of long standing importance concerning our Atomic Energy programme. I also do not recall any occasion in which Krishnan compromised his principles in expressing his views. His concluding statement at the first Indian Atomic Energy Conference (1954) presided over by Nehru to define our atomic energy programme is a document that shows the vision and strength of character.

It is impossible in any reflections on the history of Indian science for the last 100 years to omit the name of Homi Bhabha. Of all the scientists of the period he contributed most to the development of science and technology in all its aspects. The success of Homi Bhabha in a way was as a result of his upbringing and his constant exposure to the West.

Outstanding

Early in his career, he very quickly made his mark in Cambridge and could claim to be one of the outstanding figures in Theoretical Physics at that time. I believe that as a result of some promises he made to his family, it was planned that he would first get himself trained in engineering and then turn towards anything he liked to do. His early training in engineering was of vital importance in his formulation of a science and technology policy.

His strong character together with the support of Nehru helped him to destroy the iron grip of an insensitive administrative system. I recall in one of the many meetings his instructing the Secretariat Officers that they are there to help the scientists at all stages of their work and they should not in any way come in their way because of some existing rules for which there was no justification.

He kept close touch with the junior workers by his regular attendance at seminars and lectures where he allowed free discussions on all technical issues.

When the first Atomic Reactor 'Apsara' was due to go critical and things were not going too well, he started fuelling the reactor himself which added much to the sense of participation. He was convinced that unless we take risks and encourage indigenous development wherever possible we would never get the freedom of action in building up Indian industry generally and a powerful atomic or space programme in particular.

Bhabha was lucky enough to be at the helm of affairs, when science was considered the most prestigious activity in the 1950s and 1960s. The post-war elevation of science made him in inspired man and I wonder how he would have reacted to the present lack of interest in science in general and Atomic Energy in particular all over the world.

He had expressed many times the fear that good scientific institutions may eventually be swamped due to ineffective methods of selection, career planning and system organisation and had advocated greater autonomy for the institution he had built. His untimely death left this part of the work incomplete.

There are many more scientists of the period to whom I have made no reference and for the sake of completeness I must mention the names of Bhatnagar, Mahalonobis and Sarabhai, who also left their footprints on the Indian scientific scene. We are now an important scientific country of the world, but the co-ordination and inspiration has yet to come and one of the ways of generating this is to examine in great details the work of the great Indian scientists of the last 100 years.

[*Courtesy : The Deccan Herald*]

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCE

Statistics

1. Habib, Mohamed El-De soky. Some queueing systems with hyper Erlang distribution. Andhra University.

Mathematics

1. Arya, Shashi Prabha. Sum theorems for topological spaces. *D.Sc.* Meerut University.
2. Balasubramani, M.S. Theory of von Neumann algebras relative to group of automorphisms. University of Madras.
3. Basu, Rabitosh. Some problems on elasticity and plasticity. University of Calcutta.
4. Bhaskaran, R. Functional analysis: A study of Lipschitz function spaces. University of Madras.
5. Choudhary, Arti. A study of integral equations arising in mixed boundary value problems and their applications. Bhopal University.
6. Gupta, Veena. Motions and oscillations of bodies of revolution in a rotating fluid. Meerut University.
7. Konar, Ahutinarayan. Some aspects of atomic scattering. University of Culcutta.
8. Krishnamurthi, P.R. Boundary value problems for higher order differential equations. University of Madras.
9. Nayak, Krushna Chandra. Some results on function spaces and sequence spaces. Sambalpur University.

Physics

1. Agarwal, Sri Bhagwan. Studies of electrolytic liquids under ultrasonic wave propagation. Meerut University.
2. Chattopadhyay, Debasish. Electron transport in semiconductors. *D.Sc.* University of Calcutta.
3. Chattopadhyay, Jonaki. Electronic energy bands of heavy solids. University of Calcutta.
4. Datta, Malaybhushan. Studies on the transport properties of solids. University of Calcutta.
5. Kaul, Girdhari Lal. Experimental study of multiparticle production in P-nucleus interactions at ultra high energies. University of Jammu.
6. Krishnan, B. Studies on structural aspects of some biological solids. University of Madras.
7. Manavalan, P. Studies on the conformational stability of peptides and protein molecules. University of Madras.
8. Muthukumarasamy, P. Mossbauer effect studies on some spinal ferrites. University of Madras.
9. Pawar, Bharatsingh Hirasingh. Studies in pulsed lasers. Marathwada University.
10. Sabnis, Shrikant Govind. X-irradiated luminescence, TL, EL and magnetic behaviour of $CaSO_4$: Sm: Bi phosphors. Shivaji University.
11. Saha, Asok. Some studies in nuclear reactions and spectroscopy. University of Calcutta.
12. Sofia Khatun. Study of high energy electron scattering by complex nuclei. University of Calcutta.

Chemistry

1. Agarwal, Ram Kumar. Studies on complexing behaviour of oxygen donor molecules with Th (IV) and Zr (IV). Meerut University.
2. Alaka, Bheri Venkata. Studies on the synthesis of some useful organic substances and their characterisation. Utkal University.
3. Arkasali, Girija Shankarappa. Solution stability constants of some bivalent metal complexes of diphenylcarbazone, diphenylthiocarbazone and related compounds. Karnatak University.
4. Bandyopadhyay, Harihar. Studies on vinyl polymerization. University of Calcutta.
5. Das, Kalipada. A study on the effect of composition and fertility of soil on the productivity and properties of jute fibre. University of Calcutta.
6. Devarajan, R. Syntheses and studies on polymers of some methyl aryloxymethacrylates. University of Madras.
7. Dhyaneswar Rao, C. Studies on metal complexes. Utkal University.
8. Durairaj, K. A study of halide interaction on the coordination of different neutral monodentate ligands with di- and trivalent transition metations. University of Madras.
9. Elayaperumal, P. Reactiyity of vinyl monomers in free radical polymerization: A kinetic study. University of Madras.
10. Hariharan, S.S. Redox systems involving peroxodiphosphate for vinyl polymerization. University of Madras.
11. Kalyanasundaram. M. Studies in molecular rearrangements. University of Madras.
12. Mohammad Irshad. Studies on alpha-amylases: Preparation and properties of some alpha-amylase regulators in plant storage tissues. Meerut University.
13. Murugesan, M. Studies in the synthesis of pyrrolo (2, 3-b) quinolines. University of Madras.
14. Parameswaran, Geetha. (i) Studies in carbocylic chemistry; and (ii) Studies related to the synthesis of some substituted 4H-thieno (3, 2-b) pyrroles. University of Madras.
15. Patnaik, Dipika. Studies on spectra and useful applications of some heterocyclic compounds. Utkal University.
16. Philip, V.J. Kinetic studies on iodide induced debromination reactions. University of Madras.
17. Rameshwar Dayal. Studies on solubilizing action and physical properties of strontium and nickel soaps. Meerut University.
18. Ray, Paragsinchan. Study of coordination compounds of uranium and their applications: Stereochemical and analytical study. University of Calcutta.
19. Sadanandan, A.K. Radio tracer studies on the efficiency of P-carriers on the yield and nutrition of rice grown on different soil types. Utkal University.
20. Sehgal, Charanjit Kumar. Chemistry of natural products. University of Jammu.
21. Sharma, Saroj. Some functions of refractive index in relation to chemical constitution. Meerut University.
22. Sreeramamurthy, Chalumuri. Analytical studies on the performance of nitrogen sources on the nitrogenous constituents of soil and plant with reference to flue cured tobacco, N. tabacum. Andhra University.
23. Sreenivasulu, M. A study of physico-chemical properties of organic liquid mixtures : Excess volumes, isentropic compressibilities and infrared spectra. Sri Venkateswara University.
24. Thakare, Omkar Bakaram. Studies in some mixed ligand complexes of uranyl (II) and thorium (IV). Nagpur University.
25. Tiwari, Bindu Kumar. Biochemical changes in brain as function of nutrition and age. Meerut University.

Earth Sciences

1. Bisnoi, Om Prakash. A study of climatic water balance parameters in relation to crop planning in Punjab and Haryana. Andhra University.
2. Chandrasekhar, I.H. Geohydrological studies of the Chikkahagari River basin. Bangalore University.
3. Karuna Kumar, Kamda. Studies on some aspects of the energy budget of an agricultural crop. Andhra University.
4. Nagaraja, H.M. Geological studies of the Maestrichtian sediments of Ariyalur area, Tiruchirapalli District, South India: A contribution to the understanding of the upper cretaceous occurring south of Tethys. Bangalore University.
5. Prasada Rao, Gondi Srilakshmi Hari Vara. Some studies on agroclimatic aspects of Rajasthan. Andhra University.
6. Seralathan, Palani Andhy. Studies on texture, minera-

logy, geochemistry of the modern delatic sediments of the Cauvery River, India. Andhra Pradesh.

Engineering

1. Arunachalam, N. Strength and behaviour of composite beams of reinforced concrete and brick masonry. University of Madras.
2. Ghosh, Ranajit Kumar. Studies on frictional losses in some metal deformation processes. University of Calcutta.
3. Jayagopal, L.S. Stability and ultimate strength of slender reinforced concrete wall panels. University of Madras.
4. Khurasia, H.B. Deflection and vibration analysis of annular circular plates. Bhopal University.
5. Sabapathy, N. A computer based system for selection, allocation, monitoring and evaluation of students. University of Madras.
6. Sanyal, Smaran Kumar. Analysis of ferroresonance problem. Sambalpur University.
7. Shivarudrappa, K.B. Studies on dividing manifod flow: Advanced hydraulics, dam construction and irrigation. University of Madras.
8. Vallinayagam, E. Refined power distribution and erosion models for electric discharge machining process. University of Madras.

BIOLOGICAL SCIENCES

Biochemistry

1. Ghosh, Anil Kumar. Submerged fermentation of mushroom. University of Calcutta.
2. Gopalakrishna, Rayudu. On the metabolic role of arginase in normal and tumor tissues. University of Madras.
3. Mozeena Bano. L-asparaginase from green chillies, Capsicum annum L. University of Madras.
4. Sachidanandam, P. Mycotoxicoses: Biochemical studies on the toxin terrein, produced by Aspergillus terreus—A common food contaminent. University of Madras.
5. Subramanian, T. Mycotoxicoses: Biochemical studies on the mycotoxins of Aspergillus terreus. University of Madras.
6. Sunitha, I. Investigations of some biochemical changes in the gastro-intestinal tract as a sequel to hyperglycaemia and hyperlipaemia in rabbits. University of Madras.

Botany

1. Biswas, Sita. Cytological and cytochemical investigations on chromosomes of legumes. University of Calcutta.
2. Deshmukh, Subhash Vinayakarao. Cytogenetic studies in Anethum sowa Kurz. Nagpur University.
3. Gupta, Dilip. Studies on some aspects of metabolism in wilt disease of Cicer arietinum caused by Fusarium oxysporum F. ciceri. University of Calcutta.
4. Hiremath, Dasayya Sadashivayya. Cytological and embryological studies in some members of Lactuceae of tribe Cichorliaceae in Compositae. Karnatak University.
3. Indra Singh. Physiology of regulation of sex expression in plants with special reference to Gamma radiation and plant growth substances. Meerut University.
6. Jain, Narendra Kumar. Monographic study of some Indian species of Indigofera. Meerut University.
7. Janaki Bai, Atluri. Air spora of Visakhapatnam. Andhra University.
8. Karan Singh. Abscission studies in Capsicum annuum L. Meerut University.
9. Kolhe, Ravindra Laxman. Effect of herbicides on the cytomorphology of farm weeds. Nagpur University.
10. Mandal, Sudhendu. Aerobiology of pollen grains in West Bengal in the context of environmental pollution and respiratory allergy. University of Calcutta.
11. Rajendrudu, G. C_4 photosynthetic carbon metabolism in leaves of aromatic grasses, Cymbopogon and Vetiveria. Sri Venkateswara University.
12. Roy, P.S. Effect of industrial wastes on the ecology of fresh waters of Gorakhpur. University of Gorakhpur.
13. Sankara Rao, K. Embryological studies in Gentianeceae. Bangalore University.
14. Santhi Swaroopa, A. Studies in the nitrogen metabolism of Mestigocladus laminosus. University of Madras.
15. Sreedevi, P. Cytological and biochemical studies on the development of Asclepiadaceae. University of Kerala.
16. Sridharan, V.T. Studies on marine diatoms of the Indian coast. University of Madras.
17. Tijare, Vinayak Rajeshwar. Studies in Asclepiadaceae. Nagpur Unversity.
18. Tyagi, Suruchi, Morphological studies of Leucas and Leonotis. Meerut University.

Zoology

1. Abdul Rahman, Masood Ahmed. Studies on some fresh water ciliates. Marathwada University.
2. Anasuya, R. Some aspects of age related metabolic changes in selected tissues of frog, Rana hexadactyla. Sri Venkateswara University.
3. Bandyopadhyay, Aparna. Digestive system of Acridotheres tristis (Linn.) and Lonchura punctulata (Linn.) and some effects of thiourea and thyroxin administration on digestive organs and digestion. University of Calcutta.
4. Chari, Gopal Chillakamarri. Studies on the embryology of the vespertilionid bat, Miniopterus schreibersii fuliginosus Hodgson. Nagpur University.
5. Datta, Mansai. Studies on some aspects of neurosecretion in the central nervous system of earthworm, Pheretima posthuma. University of Calcutta.
6. Gnanamani, Golla. Studies on marine cercaria with observations on some life history stages from Andhra Coast. Andhra University.
7. Gupta, Permod Kumar. Toxic effects of two heavy metals, mercury and lead on the digestive system of Ophiocephalus punctatus and Heteropneustes fossilis. Meerut University.
8. Jagannadha Rao, Y.R.V. Role of parasite complex on the status of Chilo auricilius Dudgn. as a pest of rice. Utkal University.
9. Kandasamy, C. Studies on some South Indian Psyllids (Psyllidae: Hemiptera: Insecta). University of Madras.
10. Kodarkar, Mohan Shivruprao. Neuroendocrinology of earthworm, Octochaetodes sudershensis. Marathwada University.
11. Mane, Sadashiv Yashawant. Histochemistry of Lamellidens consobrinus Lea. Shivaji University.
12. Rao, B.S. Sensory versus metabolic effects of diet on animals under different nutritional states. Bangalore University.
13. Saha, Anup Kumar. Conspectus and evaluation of the studies on the osteocranium and Weberian apparatus of some Indian ostariophysine fishes. University of Calcutta.
14. Thangavelu, K. Bioecology of some Rhyparochrominae from South India (Lygaeidae: Heteroptera: Insectal). University of Madras.
15. Thirumalai, G. Biology, comparative morphology and host relationships of some pentatomids from South India (Pentatomidae: Hemiptera: Insecta). University of Madras.

Medical Sciences

1. Gnanavenddan, S.G. Studies on the toxicity of Paecilomyces verioti Bainier, a common food contaminant. University of Madras.
2. Lakshmanan, S. A quantitative study of the seminiferous epithelium cycle and a morphometric study of the major tssue components of the tiestis in albino mouse with special reference to the effects of the disturbed blood supply on them. University of Madras.
3. Madhavan, H.N. Role of viruses in myocarditis with special reference to cell mediated immunity in experimental coxsackie B 3 virus myocarditis. University of Madras.
4. Mehta, Harish Chander. Biochemical aspects of malabsorption in maresmees. Maharshi Dayanand University.

Agriculture

1. Bhattacharyya, Paritosh. Effect of organic manures on microbial population and mineralization of nitrogen in nitrogen fixing and phosphate solubilizing power of rice, Oryza sativa L, Cv IR-8 rhizosphere. University of Calcutta.
2. Jagmohan Kumar. Comparative study of radiation and chemical mutagenesis in tomato, Lycopersicon esculentum Mill. Meerut University.

3. Malik, Krishan Pal. Cytogenetic investigations in hexaploid triticale, Triticale hexaploide Lart. Meerut University.

4. Muralidharan, A. Biomass productivity, plant interactions and economics of inter-cropping in arecanut. University of Agricultural Sciences. Bangalore.

5. Nanjappa, H.V. Crop weed competition and weed control studies in finger millet, Eleusine coracana Gaertn. University of Agricultural Sciences, Bangalore.

6. Raj, J. Role of microorganisms in the release of soil phosphates to plants. University of Agricultural Sciences, Bangalore.

7. Sharma, Ramesh Chand. Stalk rot of cauliflower (Brassica oleracea var. Botrytis) caused by Sclerotinia sclerotiorum (Lib.) de Bary. Himachal Pradesh Krishi Vishvavidyalaya.

8. Singh, Ramadhin. Studies on the bearing habit, flowering, fruit drop and fruit development in Bael, Aegle marmelos. Meerut University.

9. Taneja, Sham Lal. Studies on the incidence and management of pink bollworm, Pectinophora gossypiella sound on cotton. Haryana Agricultural University.

10. Varma, Virendra Singh. Irrigational and manurial studies in lentil, Lens esculentus. Meerut University.

Animal Husbandry

1. Chattopadhyay, Anupam. Ringworm in domestic animals and their public health implication. University of Calcutta.

2. Rajamohan, K. Studies on the common ticks affecting livestock in Kerala. Kerala Agricultural University.

3. Sathianesan, V. Studies on certain gastro-intestinal nematodes with special reference to those found in goats. Kerala Agricultural University.

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MARATHWADA AGRICULTURAL UNIVERSITY

PARBHANI (MAHARASHTRA STATE)

Advertisement No. MAU 1/80

Applications in the prescribed form are invited on or before 11 August 1980 for the following posts in the pay scale mentioned against each post.

Sr. No.	Designation of the post	Pay scale	No. of posts to be filled
1	2	3	4
1.	Comptroller	Rs. 680-40-1000-EB-50-1500/-	1
2.	University Engineer	Rs. 1000-50-1500/-	1
3.	Asso. Dean & Principal, (H.S.)	Rs. 1500-60-1800-100-2000-125/2-2500/-	1
4.	Registrar	Rs. 1100-50-1550-75-1700/-	1
5.	**PROFESSOR OR EQUIVALENT**		
	(i) Agril Entomology	Rs. 1500-60-1800-100-2000-125/2-2500/-	1
	(ii) Agril Economics	-do-	1
	(iii) Home Science	-do-	2
	(iv) Chief Extn. Edu. Officer	-do-	1
	(v) Deputy Director, Central Farm	-do-	1
6.	**ASSOCIATE PROFESSOR OR EQUIVALENT**		
	(i) Food Engineering (Tech)	Rs. 1200-50-1300-60-1900/-	1
	(ii) Cereal Technology (Tech)	-do-	1
	(iii) Food Microbiology (Tech)	-do-	1
	(iv) Extension (Vety)	-do-	1
	(v) Surgeory (Vety)	-do-	1
7.	**ASSISTANT PROFESSOR OR EQUIVALENT**		
	(i) Physiology (Vety)	Rs. 700-40-1100-50-1600/-	2
	(ii) Food & Nutrition (Home Sci.)	-do-	1
	(iii) Anatomy (Vety)	-do-	1
	(iv) Horticulture (Agril)	-do-	5
	(v) Agril. Economics	-do-	3
	(vi) Agril. Statistics	-do-	2
	(vii) Gynaecology (Vety)	-do-	1
8.	Medical Officer	Rs. 600-30-750-EB-40-1150/-	1
9.	Assistant Comptroller/Assistant Accounts Officer	-do-	1
10.	Demonstrator (Home Science)	Rs. 500-20-700-25-900/-	1
11.	Veterinary Officer	-do-	2
12.	Agril. Supervisor	Rs. 365-15-500-20-600-Extn-20-760/- (Agril. graduate to start on Rs 410/-)	3
13.	Oil Engine Driver	Rs. 250-7-285-10-385-Extn-10-435/-	1
14.	Electrician	-do-	1
15.	Plumber	-do-	1
16.	Gas Plant Mechanic	-do-	1
17.	Foremen Supervisor	Rs. 365-15-500-20-600-Extn-20-760/-	1
18.	Artist	-do-	1
19.	Fitter-cum-Machinist	Rs. 290-10-390-15-465-Extn-15-540/-	1
20.	Fitter	-do-	1
21.	Carpenter	Rs. 260-10-390-15-420-Extn-15-495/-	1
22.	Blacksmith	-do-	3
23.	Lab. Assistant (Home Science)	-do-	2
24.	Boiler Assistant (Technology)	-do-	1

QUALIFICATIONS

For the post at Sr. No. 1

Essential

At least second class Graduate of a recognised University with experience of Financial and General Administration in a Gazetted or Superior, Supervisory capacity for atleast five years with Government or business or in a University.

OR

A fully Chartered Accountant with atleast three years experience.

For the post at Sr. No. 2

Essential

A. (i) Bachelor's degree in Civil Engineering with atleast second class or 50% marks.

AND

(ii) Atleast five years experience in the execution of Civil works in a Gazetted or its equivalent post.

OR

B. (i) Diploma in Civil Engineering of a Government recognised institute with atleast second class or 50% marks.

AND

(ii) At least Ten years experience in the execution of Civil works, out of which at least five years should be in the capacity of Gazetted Officer or its equivalent post.

Higher start may be considered in case of deserving candidates.

For the post at Sr. No. 3

Essential

A. (i) Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in Second class with atleast 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with atleast 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

(iii) Atleast five years experience of teaching and/or research and/or Extension Education after post-graduation in the field of specialisation as evidenced by the publications in scientific journals of repute and outstanding record of service.

OR

B. (i) Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with atleast 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master's degree in Home-Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with atleast 50% marks or minimum C.G.P.A. of 2.50 in four point scale.

AND

(iii) Doctorate degree in any branch of Home Science.

AND

(iv) At least five years experience of teaching and/or research and/or Extension Education after post-graduation in the field of specialisation as evidenced by the publications in the scientific journals of repute, and an outstanding record of service.

Desirable

(i) Doctorate degree in specialised branch of Home-Science.

(ii) Experience of Post-Graduate teaching in Home-Science.

(iii) Familiarity with the modern concepts of organisation, and coordination of teaching and/or Research and/or Extension Education activities in Home Science.

(iv) Knowledge of Marathi.

Note:—Qualifications may be relaxed in the case of candidates otherwise well deserving and available for the post.

For the post at Sr No. 4

Essential

(i) Bachelor's degree in Arts/Commerce/Science/ Agriculture/ Vaterinary Science/Law/Engineering/Public Administration/B. Tech (Food Sciences)/Home Science of any statutory University/Institute.

AND

Experience of teaching and/or Research and/or Extension education/ or Administration atleast for a period of five years.

(i) In a Class-I or higher post under the Government of India or under any of the State Government.

AND/OR

(ii) In a post corresponding to or higher than the post of Deputy Registrar under statutory University/or Institute.

For the post at Sr. No. 5(i) & 5(ii)

(i) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto in second class with at least 45% marks/or with minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master's degree in Agriculture of this University or a degree or diploma of any other University/Institute in the subject recognised as such by this University as equivalent thereto in second class or 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

(iii) Atleast five years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by the published results in scientific journals of repute and outstanding record of service.

Desirable

(i) Doctorate degree in respective subject or in specialised branch.

(ii) Experience of post-graduate teaching.

(iii) Familiarity with the modern concepts of organisation and coordination of teaching and/or research and/or extension education activities in agriculture.

For the post at Sr. No. 5(iii)

Essential

(i) Bachelor's degree in Home-Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in second class with atleast 45% marks or with minimum C.G.P.A. of 2.25 in the four point scale.

AND

(ii) Master's degree in Home-Science in (Food and Nutrition/Child Development/Clothing and Textile) of this University or a degree or diploma of any other University/Institute in the subject and recognised as such by this University as equivalent thereto in second class with atleast 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

(iii) Atleast five years experience of teaching and/or Research and/or Extension Education after Post-Graduation in the field of specialisation as evidenced by the publications in scientific journals of repute and an outstanding record of service.

Desirable

(i) Doctorate degree in the specialised branch.

(ii) Experience in post graduate teaching in Home Science.

(iii) Familiarity with the modern concepts of organisation, and coordination of teaching and/or research and/or extension education activities in Home Science.

(iv) Knowledge of Marathi.

For the Post at Sr. No. 5(iv)

Essential

(i) Bachelor's of Science degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto in Second Class or 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master of Science degree in Agriculture in respective subject of this University or a degree or diploma of any other University/Institute in the subject and recognised as such by this University as equivalent thereto in Second Class with atleast 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

(iii) Atleast five years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by the published results in scientific journals of repute and an outstanding record of service.

Desirable

(i) Doctorate degree in respective subject or in specialised branch.

(ii) Experience of post-graduate teaching.

(iii) Familiarity with the modern concepts of organisation and coordination of teaching and/or research and/or extension activities in Agriculture.

For the post at Sr. No. (v)

(i) Bachelor's degree in Agriculture and Master's degree in Agril. in Agronomy/Botany/Horticulture/ of this University or of any other University/Institute recognised as such by this University as equivalent thereto, with 45% marks or more.

AND

(ii) Atleast five years experience of teaching and/or research and/or extension education/Farm Management/Seed Production after post-graduation in the field of agriculture as evidenced by published results in scientific journals of repute and an outstanding record of service.

For the post at Sr. No. 6(i)

Essential

(a) Bachelor's degree in Agriculture/ Agril. Technology/Agril. Engineering/Food Engineering of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or 2.25 C.G.P.A. in four point scale.

AND

(b) Master's degree in Food Engineering of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 50% marks or 2.50 C.G.P.A. in four point scale.

AND

(c) At least three years experience of teaching and/or research and/ or extension education after post-graduation in the field of specialisation as evidenced by publication in Scientific journals of repute and an outstanding record of service.

Desirable

Doctorate degree in specialised branch

Note: Experience relaxable in the case otherwise well deserving candidates.

For the post at Sr. No. 6(ii)

Essential

1. Bachelor's degree in Agriculture/Science/Agril. Technology of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Food Technology/Agril. Technology/Agriculture in the concerned subject of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale.

AND

Atleast three years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by publications in scientific journals of repute and an outstanding record of service.

OR

2. Bachelor's degree in Agriculture/Science/Agril. Technology of this University or of any other University / Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Science with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale with Ph.D. degree in concerned subject.

Desirable

Doctorate degree in concerned subject.

Note: Experience relaxable in case of well deserving candidate.

For the post at Sr. No. 6 (iii)

Essential

1. Bachelor's degree in Agriculture/Science/Agril. Technology/Veterinary/Horticulture/Fisheries of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Masters degree in Food Technology/Agril. Technology in the concerned subject of this University or of any other University/Institute, recognised as such by this University as equivalent thereto with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale.

AND

Atleast three years experience of teaching and/or research and/or extension education after post-graduation in the field of specialisation as evidenced by publications in scientific journals of repute and an outstanding record of service.

OR

2. Bachelor's degree in Agriculture/Science/Agril. Technology/Veterinary/Horticulture/Fisheries of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks or with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Science with atleast 50% marks or with atleast 2.50 C.G.P.A. in four point scale with Ph.D . degree in the concerned subject.

Desirable

Doctorate degree in specialised branch.

Note: Experience relaxable in case of well deserving candidate.

For the post at Sr. No. 6(v)

Essential

A. (i) Bachelor's degree in Veterinary Science of this University or of any other University/Institute and recognised as such by this University as equivalent thereto in Second Class or 45% marks or minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master's degree in Veterinary Science of this University or a degree of any other University/Institute in the subject and recognised as such by this University as equivalent thereto with atleast 50% marks or minimum C.G.P.A. of 2.50 in four point scale.

AND

(iii) Atleast three years experience of teaching and/or Research and/or Extension Education after post-graduation in the field of specialisation in Veterinary Science as evidenced by the published results in scientific journals of repute and an outstanding record of service.

Desirable

Doctorate in any of the branches basic to the subject concerned.

For the post at Sr. No. 6 (iv)

Essential

1. Bachelor's degree in Veterinary Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in Second Class or atleast 45% marks or minimum C.G.P.A. of 2.25 in four point scale.

AND

2. Master's degree in Verterinary Science/Agriculture in the concerned subject or M.Sc. in Extension of this University or of any other University/Institute recognised as such by this University as equivalent thereto with at least 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

AND

3. At least three years experience of teaching and/or research and/or extension education after post graduation in the field of specialisation in Extension as evidenced by published results in scientific journals of repute and an outstanding record of service.

Desirable

(i) Doctorate in any of the branches basic to the subject.

(ii) Two years service experience after Doctorate in teaching and/or research and/or extension education as evidenced by published results in scientific journals of repute and an outstanding record of service.

For the post at Sr. No. 7(i), 7(iii) & 7(vii).

Essential

(1) Bachelor's degree in Veterinary Science of this University or of any other University/Institute and recognised as such by this University as equivalent thereto in second class or 45% marks or 2.25 C.G.P.A. in four point scale.

AND

(2) Master's degree in Veterinary Science of this University or of any other University / Institute in the respective subject and recognised as such by this University as equivalent thereto, with atleast 50% marks or minimum C.G.P.A. of 2.50 in four point scale.

For the post of 7(iv), 7(v)

Essential

(i) Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto in Second Class or 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master's degree in Agriculture of this University or a degree of any other University/Institute in respective subjects and recognised as such by this University as equivalent thereto in Second class with atleast 50% marks or with minimum C.G.P.A. of 2.50 in four point scale.

Desirable

(i) Experience of Post-graduate Teaching and/or research and/or Extension Education.

For the post at Sr. No. 7(vi)

Essential

(i) Bachelor's degree in Science with Mathematics/Statistics of any University with at least 45% marks in the aggregate.

OR

(ii) Bachelor's degree in Agriculture or Veterinary Science of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in the aggregate or with the course credit and Internal evaluation system of education with minimum C.G.P.A. of 2.25 in four point scale.

AND

(iii) Second class Master's degree in Science in Agril/Statistics/Statistics of any University/Institute with papers only or with papers and Research and with atleast 45% marks in the aggregate or with the course credit & Internal Evaluation system of Education.

For the post at Sr. No. 7(ii)

Essential

1. Bachelor's degree in Home-Science/ Agril-Technology / Agriculture / Science Veterinary / Horticulture/ Fisheries of this University or of any other University/Institute recognised as such by this University as equivalent thereto and/ or P.G. diploma in food and Nutrition as recognised by this University with atleast 45% marks of with atleast 2.25 C.G.P.A. in four point scale.

AND

Master's degree in Home-Science/ Agril Tech/Agriculture/Science/ Veterinary/ Horticulture/ Fisheries/ Nutrition of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 50% marks or 2.50 C.G.P.A. in four point scale.

Desirable

(i) Doctorate degree in the concerned subject.

(ii) Experience of post-graduate teaching and/or research and/or Extension Education.

(iii) Knowledge of Marathi.

For the post at Sr No. 8

Essential

(i) M.B.B.S. degree recognised by the Medical Council of India.

AND

(ii) At least two years experience as a Registered medical practitioner.

Desirable

Post-graduate degree in Medicine/ Surgery.

For the post at Sr. No. 9

Essential

At least Second class graduate of a recognised University with experience of financial and general administration in a Gazetted or superior supervisory capacity for atleast three years with Government or business or in a University.

OR

A fully Chartered Accountant with at least two years experience.

For the post at Sr. No. 10

Essential

A. (i) Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in first class with atleast 60% marks in the aggregate or with minimum C.G.P.A. of 3.00 in four point scale.

OR

B. (i) Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in Second Class with atleast 45% marks or with minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master's degree in Home Science of this University or a degree or diploma of any other University/Institute recognised as such by this University as equivalent thereto in Second Class with atleast 45% marks or with the minimum C.G.P.A. of 2.25 in four point scale.

For the post at Sr. No. 11

Essential

A. (i) Bachelor of Science degree in Veterinary Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto in first class with atleast 60% marks in the aggregate or minimum C.G.P.A. of 3.00 in four point scale.

OR

B. (i) Bachelor of Science degree in Veterinary Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto with atleast 45% marks in aggregate or minimum C.G.P.A. of 2.25 in four point scale.

AND

(ii) Master of Science degree in Veterinary Science of this University or a degree or diploma of any other University/Institute in the subject and recognised as such by this University as equivalent thereto, with atleast 50% marks or minimum C.G.P.A. 2.50 in four point scale.

For the post at Sr. No. 12

Essential

Bachelor's degree in Agriculture of this University or a degree of any other University/Institute recognised as such by this University as equivalent thereto in second class/with 45% marks in aggregate or/with minimum C.G.P.A. of 2.50 in four point scale.

For the post at Sr. No. 13

(i) VIII Standard passed.

AND

(ii) Oil Engine Training course passed. One years experience in operation maintenance and repairs of oil engine or training/fitting or minor repairs of motor vehicles, including tractors.

For the post at Sr. No. 14

(i) Certificate from an I.T.I. in the trade of Electrician.

(ii) One year experience in the field.

For the post at Sr. No. 15

(i) Licence of Municipal Engineering and preferably a diploma in plumbing of I.T.I.

AND

(ii) Experience of atleast 2 years in Municipality or with any authorised contractor.

AND

(iii) VIII standard passed.

For the post at Sr. No. 16

(i) Diploma in the concerned subject from the Government I.T.I.

(ii) Preferably a candidate having special type of training in gas plant.

For the Post at Sr. No. 17

(i) persons with at least 5 years experience from the department of Agriculture.

OR

(i) Diploma in concerned subject.

AND

(ii) Two years experience as foreman supervisor.

For the post at Sr. No. 18

Essential

(i) Government diploma in Fine Arts from J.J. School of Arts or any other Government institution.

AND

(ii) Minimum five years experience in Agricultural University and/or Department of Agriculture and/or Government Educational Institution in the field of fine arts.

Desirable

(i) Good knowledge of developing, enlarging, finishing retouching, colouring of photographs and exhibts.

AND

(ii) Good knowledge of docustat photocopying, printing, layouts designing and commercial arts.

For the post at Sr. No. 19

(i) Diploma in concerned subject from The Government recognised I.T.I.

(ii) Two years experience in the trade concerned.

For the post at Sr. No. 20

(i) Diploma in concerned subject from the Government recognised I.T.I.

(ii) One year experience in the trade concerned.

For the post at Sr. No. 21

Essential

(i) Government Certificate/Diploma in Carpentery of I.T.I.

AND

(ii) At least two years experience in Government workshop institute and/or in well known workshop.

For the post at Sr. No. 22

Essential

(i) Government Certificate/Diploma in Blacksmith of I.T.I.

AND

(ii) At least two years experience in a Government workshop and/or well known workshop.

For the post at Sr. No. 23

Essential

1. Bachelor's degree in Home Science of this University or of any other University/Institute recognised as such by this University as equivalent thereto with 45% marks in aggregate or minimum C.G.P.A. of 2.00 in four point scale.

OR

2. Should have passed atleast S.S.C. examination or any other examination recognised as equivalent thereto.

AND

3. Diploma in Home Science of this University or of any other University/Institute recognised as equivalent thereto with atleast 45% marks or 2.00 C.G.P.A. in four point scale.

For the post at Sr. No. 24
Essential

I.T.I. Diploma/Certificate in the concerned trade.

AND

Atleast three years experience in the concerned field.

NOTE: The person selected for the post at Sr No. 4 will be on tenure for a period of five years. Out of this for the first year he will be on probation and after completing probation satisfactorily he will be continued for another four years.

AGE: Age limit as per Govt. of Maharashtra recruitment rules for corresponding similar posts.

Maximum age limit will be relaxable for all posts by 5 years for the candidates belonging to SC/ST/NT/DNT/OBC.

The age limit shall not apply to persons already in service of Central/State Government/ this University or any other University/Institute recognised by this University.

Application forms for the posts at Sr. (1) to (9) can be obtained from the Comptroller, Marathwada Agril. University, Parbhani at the cost of Rs. 2/- in the form of crossed Indian Postal Order in the name of Comptroller, Marathwada Agril. University, Parbhani and for these posts applications in the prescribed forms complete in all respect together with Crossed Indian Postal Order of Rs 8-in the name of the Comptroller, Marathwada Agril. University, Parbhani as registration fees should reach to the Registrar, Marathwada Agril. University, Parbhani latest by 5.00 p.m. on **11.8.1980**.

Application forms for the posts at Sr. No. 10 to 24 can be obtained from the Comptroller, M.A.U., Parbhani free of cost only for **unemployed candidates** and should be submitted without registration fees to the Registrar, M.A.U., Parbhani latest by 5.00 p.m. on **11.8.1980**. Other candidates willing to apply for the post at Sr. No. (10 to 24) will have to obtain prescribed application forms at the cost of Rs. 2-in the form of Crossed Indian Postal Orders in the name of the Comptroller, MAU, Parbhani and should submit without registration fees to the Registrar, M.A.U., Parbhani latest by 5.00 p.m. on **11.8.1980**.

Incomplete applications in any form and these received after prescribe time and date will not be considered and no correspondence thereon will be entertained.

(*Continued on last page*)

ANDHRA PRADESH AGRICULTURAL UNIVERSITY

ADMINISTRATIVE OFFICE "RAJENDRANAGAR"
HYDERABAD-500020.

Advertisement No. 4/80, dt. 30-6-1930

Applications are invited for the following posts in the Andhra Pradesh Agricultural University.

Applications along with the Registration fee of Rs. 5/- should reach the Registrar on or before **11-8-1980**

	Post & Scale of pay (1)	No. of posts (2)	Qualifications (3)
1.	Associate Professors (Foods & Nutrition) Rs. 1200-50-1300-60-1900 Temporary, but likely to continue.	2	(a) **Essential** (i) Ph.D. degree or any other equivalent degree in the subject concerned or should have published work of an equally high standard in addition to Master's degree in the subject concerned. (ii) Experience of five years in teaching and/or research and/or extension in the subject concerned (iii) Other things being equal, preference shall be given to persons possessing a basic professional degree in the Faculty concerned. (b) **Desirable** Published research work to credit.
2.	Associate Professor Home Management) Rs. 1200-1900. Temporary, but likely to continue.	1	
3.	Associate Professor (Child Development) Rs. 1200-1900 Temporary, but likely to continue.	1	
4.	Assistant Professors (Home Management) Rs. 700-1600 Temporary, but likely to continue	2	(a) **Essential** (i) A Post-Graduate degree in the subject concerned. (ii) Three years experience in teaching and/or Research and/or extension in the subject concerned. **Note**: Ph.D. degree holders in the subject are exempted from the three years experience. (b) **Desirable** (i) A Ph. D. degree in the subject concerned. (ii) Other things being equal, preference shall be given to persons with basic professional degree in the faculty concerned.
5.	Assistant Professors (Foods & Nutrition) Rs. 700-1600 Temporary, but likely to continue.	3	
6.	Assistant Professors (Child Development) Rs. 700-1600 Temporary, but likely to continue.	2	
7.	Assistant Research Officer (Bio-Chemistry/Nutrition) Rs. 700-40-1100-50-1600 Temporary, but likely to continue.	1	1. M.Sc. /Ph.D. degree in Bio-Chemistry or Nutrition. 2. **Experience**: In case of candidates possessing only M.Sc. degree, they should possess at least 3 years of experience in the analysis of Food samples.
8.	Assistant Research Officer (Food Technology) Rs. 700-40-1100-50-1600 Temporary, but likely to continue.	1	1. M.Sc. in Food Technology. 2. **Experience**: At least 3 years of experience in formulating testing the new products for consumer acceptability and table quality.
9.	Junior Scientist (Foods & Nutrition Consolidated pay of Rs. 900/- p.m. Temporary, but likely to continue.	1	M.Sc. in Foods & Nutrition.
10.	Junior Scientist (Home Management) Consolidated pay of Rs. 900/- p.m. Temporary, but likely to continue.	1	M.Sc. in Home Management
11.	Junior Scientist (Textiles & Clothing) Consolidated pay of Rs. 900/- p.m. Temporary, but likely to continue.	1	M.Sc. in Textiles & Clothing

(i) Applicants should appear for interview before the selection committee at their own cost.

(ii) Selected candidates are liable to be transferred to any equivalent post in teaching, research and extension in the University.

(iii) Selected candidates will be governed by Andhra Pradesh Agricultural University Conditions of Service.

(iv) Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Administrative Office, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in cash or through postal order UNCROSSED.

T. Narayan Reddy
REGISTRAR

BANARAS HINDU UNIVERSITY

Advertisement No. 11/1980-81

APPLICATIONS are invited for the undermentioned posts in the Centre of Advanced Study in Physical and Mechanical Metallurgy/Special Assistance Programme, Dept. of Metallurgical Engineering, I.T. The Department has the following sophisticated equipment and facilities for supporting research in Physical and Mechanical Metallurgy; (Transmission, Electron microscope, Scanning electron microscope, X-Ray diffractometer, Instron testing machine, Servohydraulic mechanical testing system (under order), Differential scanning calorimeter, Atomic absorption spectrometer, Vacuum induction melting unit and Rolling mill (under installation). Access is available to cryogenic equipment and ICL-19046 computer.

The benefit of Provident Fund/Pension, Dearness Allowances. House Rent Allowances and City Compensatory Allowances are admissible according to University rules. The retirement age of University employees is 60 years. The appointment will be made on two years probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft or Crossed Indian Postal Orders for Rs. 7.50 in favour of the Registrar, Banaras Hindu University towards the application fee. Application forms alongwith the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005 on receipt of Re. 0.65 paise stamped self-addressed envelope of 23 cm x 10 cm size. Candidates called for interview for these posts will be paid actual Railway fare by the Second Class plus reservation charges for sleeper, if paid, and/or actual Bus fare from the present residence both ways by the shortest route as per University rules. No other expenses will be paid.

Application for each post be sent separately alongwith attested copies of certificates in support of the qualifications and experience mentioned to the application and be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005.

Incomplete application in any respect will not be entertained for consideration.

Those who are in service should apply through proper channel. M.O. or Cheque will not be accepted towards the application fee.

For the post of Lecturer, other things being equal, preference will be given to Scheduled Caste/Scheduled Tribes candidates who are considered fit.

Applicants may send their bio-data alongwith attested copies of all the certificates and details on plain paper alongwith the application fee of Rs. 7.50 in Bank Draft/I.P.O. to avoid delay in case they do not get the prescribed form in time.

Note: Number of vacancies are tentative and can vary according to needs.

Last date for reciept of application is July 31, 1980.

1. **PROFESSOR OF METALLURGY** (Physical/Mechanical Metallurgy) **(One) (Centre)** Grade : Rs. 1500-60-1800-100-2000-125/2-2500.

Qualifications : Essential

(1) A Doctorate Degree based on work in Physical/Mechanical Metallurgy and/or published work of very high standard. (2) A first or second class Master's Degree in Metallurgical Engineering or an equivalent qualification. (3) About ten years experience in responsible position in teaching/research/industry. (4) Experience of having guided research work of a high standard or evidence of original work in Design/Development. (5) Specialisation in one or more of the following areas:—Advanced Metallography; Phase Transformation; Rapid Solidification; Metallic Glasses; Deformation Studies; Fracture Mechanics; Mechanical Processing; Alloy Development.

Desirable

(1) Research publication of outstanding merit. (2) Brilliant academic record. (3) Recognitions/honours at National/International levels. (4) Membership of Professional organisations.

2. **READER IN METALLURGY** (Physical/Mechanical Metallurgy) (two) **(Centre)**
Grade: Rs. 1200-50-1300-60-1900.

Qualifications : Essential

(1) A Doctorate Degree based on work in Physical/Mechanical Metallurgy or published work of an equally high standard. (2) A first or second class Master's Degree in Metallurgical Engineering or an equivalent qualification. (3) About five years experience in responsible position in teaching/research industry. (4) Specialisation in one or more of the following areas :—Advanced Metallography; Phase Transformation; Rapid Solidification; Metallic Glasses; Deformation Studies; Fracture Mechanics; Mechanical Processing; Alloy Development.

Desirable

(1) Research publications of outstanding merit. (2) Brilliant academic record. (3) Academic recognition/honours. (4) Membership of professional organisations.

3. **LECTURER IN PHYSICAL METALLURGY** (One) (under Special Assistance Programme)
Grade: Rs. 700-40-1100-50-1600.

Qualifications : Essential

(1) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent qualification. (2) (2) Specialisation in one or more of the following areas of research : X-ray/Electron/Field-Ion Metallography; Thermal/Mechanical/Thermomechanical Treatments; Phase Diagrams/Transformations/Stability, Structure and Structural Imperfections; Development of New Materials Techniques/Theories. (3) Some experience in teaching/research/industry.

Desirable

(1) Doctorate Degree in the subject. (2) Some experience in teaching and/or research in the field of Physical Metallurgy.

Note: 1. Those who have applied earlier for the post of Lecturer in Physical Metallurgy in response to our advertisement No. 9/79-80 need not apply again.

2. Those who have obtained Doctor's Degree in the subject concerned will also be considered irrespective of the fact whether they have a Post-Graduate Degree in the subject or not (applicable for all the above posts).

4. **SCIENTIFIC OFFICER** (One) (Special Assistance Programme)
5. **SCIENTIFIC OFFICER** (One) (Centre)
Grade: Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications : Essential

(1) Master's Degree in Physical Science or Bachelor's degree in Technology with 2 years work experience or Bachelor's degree in Physical Science with 5 years work experience or Engineering Diploma with 10 years work experience.

Desirable

(1) Work experience in the maintenance and operation of sophisticated equipment in one or more of the following laboratories: (i) Electronic Instrumentation, (ii) Electron Microscopy, (iii) Scanning electron microscopy, (iv) X-Ray equipment, (v) Modern mechanical testing, (iv) Mechanical forming equipment.

(*Contd. on back page*)

(Continued from previous page)

Note : Those who have applied earlier for the post No. 4 in response to our Advertisement No. 8/79-80 need not apply again.

6. **FOREMAN** (One) (Centre)
Grade: Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications : Essential

(1) B. Tech. (Met. Engg./Production Eng.) or equivalent with atleast 5 years experience in machining/forming/fabrication or equipment **or** Engineering Diploma with 10 years experience.

Desirable

(1) Work experience in the management of a workshop. (2) Experience in fabrication of research equipment in Physical/Mechanical Metallurgy.

UNIVERSITY OF RAJASTHAN
JAIPUR

Advertisement No. 17/80

Applications are invited (through proper channel in case of those already in employment) so as to reach this office on or before **31-7-1980** on the prescribed form available from the Registrar's office on pre-payment of Rs 4/- (Rs 3/- extra in case required by post) for the undermentioned posts :

Editor for Index India—Rs 1500-60-1800-100-2000.

Essential Qualifications

(a) M.A./M.Sc./M.Com first or second division plus B.Lib.Sc. or Diploma in Library Science (One year's Course) first or second division.
OR
M.Lib.Sc. first or second division plus B.A./B.Sc./B.Com. first or second division.

(b) At least five years experience of Documentation work on a standard indexing service.

(c) Good grounding in colon classification plus ability to expand the schedules for depth classification.

Desirable Qualifications

Five years administrative experience of a University or a Research Library.

Assistant Editor for Index India—Rs 700-40-1100-50-1300.

Essential Qualifications

(a) M.A./M.Com./M.Sc. first or second division plus B.Lib.Sc. or Diploma in Library Sc. (One year's course) first or second division.
OR
M.Lib.Sc. first or second division plus B.A./B.Sc./B.Com. first or second division.

(b) At least three years experience of Documentation work.

(c) Good grounding in Colon Classification.

Desirable Qualifications

(a) At least three years experience of working in a responsible capacity in a University or a Research Library.

(b) Knowledge of proof reading and press work.

Note: Qualifications and experience can be relaxed in respect of internal candidates who have shown exceptional merit in the field of the documentation work.

Benefit of Provident Fund and other allowances will be admissible as per rules of the University. Candidates who had applied for the post of Editor in response to the earlier advertisement No. 12/79 and 1/80 and for the post of Assistant Editor in response to the earlier advertisement No. 12/79 need not apply again. They may intimate to the Registrar by the prescribed date that they are still interested to be considered for the post. Candidates will be called for interview at their own expense. Retired persons need not apply.

V.D. Qamra
REGISTRAR

THE UNIVERSITY OF BURDWAN
RAJBATI : BURDWAN
WEST BENGAL

Advertisement No. 2/80-81
Dated, 5th July, 1980

Applications are invited for the following posts :

1. Deputy Registrar ... One post
2. Deputy Inspector of Colleges ... One post

Scale of Pay : Rs 1200-50-1300-60-1900 plus dearness and other allowances and pensionary benefits according to the rules of the University.

Educational Qualifications & Experience
(a) **Essential**

(i) Uniformly good academic record with a B+ Master's Degree or its equivalent.

(ii) At least 10 year's experience in a position involving supervision, Control and Planning of Examinations, administration of Colleges or in an Institute of Higher Learning or Government or other academic bodies. At least 5 years of the 10 years' experience should be in higher position of high level administration.

(iii) Age not less than 35 years. Relaxable in case of exceptionally qualified candidates.

(b) **Desirable**

(i) A Doctorate Degree or published papers or high standard.
OR
(ii) Experience of at least 10 years in a fairly senior position in any academic institution like a college or a University or a research organisation.

The choice of the Selection Committee may not necessarily be confined to those who apply formally.

Those who applied earlier need not apply again.

For application form and other information apply to the Registrar with a self-addressed stamped (0.40p.) envelope (9″×4″).

Last date for submission of application with requisite fee of Rs 5/- is **31st July, 1980.**

A.K. Chaudhuri
REGISTRAR

MARATHWADA AGRICULTURAL UNIVERSITY

(Continued from page 400)

Reservation of post for SC/ST/NT/DNT/OBC etc. is as per Maharashtra State Government rules

Request for forms must specify the name and Sr. No. of the post accompanied by self-addressed envelope atleast of the size of 23 cm x 10 cm with 0.65 paise stamp adhered to it. Separate applications shall have to be made for separate posts.

If considered necessary by the University the candidate shall have to appear for personal interview in the University's office at Parbhani at candidate's cost.

In the event of large number of applications received in response of this advertisement, to avoid inconvenience to all concerned, at the discretion of the Vice-Chancellor, limited number of candidates may only be invited for interview even though others not invited for interview might be satisfying the prescribed minimum qualifications.

Candidates already in service of Central/State Government or any other Organisations and those in the service of this University should necessarily apply through proper channel forwarding an advance copy to the undersigned. The advance copy should reach latest by 5.00 p.m. on **11 Aug 1980**. The applications to be received through proper channel should reach latest by 5.00 p.m. on **27 Aug 1980**. University will not be responsible for postal delay.

The fact that the posts are advertised does not mean that necessarily all the posts will be filled in.

CANVASSING IN ANY FORM WILL DISQUALIFY THE CANDIDATE, FOR EMPLOYMENT UNDER THIS UNIVERSITY.

S.T. Kachwe
REGISTRAR

Printed & Published by ANJNI KUMAR, on behalf of the Association of Indian Universities (formerly known as Inter-University Board of India), Rouse Avenue, New Delhi - 110002
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University News

Information Service
21 AUG 1980
C.F.T.R.I., MYSORE

A FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH AUGUST 1, 1980

Agitating doctors in a procession in New Delhi

DIBRUGARH UNIVERSITY

DIBRUGARH : ASSAM

Advertisement No. 4/80

Applications are invited for the undermentioned posts :

Professors		
1.	History	—One
2.	Statistics	—One
Readers		
3.	Applied Geology	—One
4.	Life Sciences	—Two
5.	Political Science	—One
6.	Economics	—One
7.	Statistics	—One
Lecturers		
8.	Methematics	—Two
9.	Assamese	—One
10.	Applied Geology	—Three
11.	English	—Two
12.	English	—One (For the Deptt. of Education)

Scale of Pay

Professor—Rs. 1500-60-1800-100-2000-125/2-2500/-

Reader—Rs. 1200-50-1300-60-1900/-

Lecturer—Rs. 700-40-1100-50-1600/-

All posts carry usual allowances admissible under the University Rules in force from time to time and the incumbents against leave vacancy posts will be eligible for Contributory Provident Fund and Gratuity on confirmation as per rules of the University.

Qualification : Essential

Professor

(a) An eminent scholar with published work of high quality actively engaged in research, ten years experience of teaching and/or research experience of guiding research at doctorate level.

(b) An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader

(a) Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research (ii) innovation in teaching methods or (iii) Production of teaching materials.

(b) At least five years of teaching and/or research provided that at least three of these years were as lecturer in equivalent position.

Lecturers

(a) A doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subject.

Provided that, if the Selection Committee is of the view that the research work of a candidate as evident either tion his thess or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that, if a candidate possessing a doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to, M. Phil. or equivalent degree or research of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils those requirements.

Specialisation

(i) **For the Reader (Applied Geology)**
Exploration, Development and Exploitation of Oil and Gas Fields/Economics Geology/Mining Geology/Structure and Tectonics/Sedimentology/Mineralogy and Petrology/Geological Mapping and Geological Prospecting.

(ii) **For the Readers (Life Sciences)**
M.Sc. in Botany, Zoology, Life Sciences or Biology.
Specialisation in : Ecology, Cytogenetics, Developmental Bio logy, Microbiology, Plant Physiology, Animal Physiology.

(iii) **For the Reader (Political Science)**
Open.

(iv) **For the Reader (Economics)**
Industrial Economics of Education.

(v) **For the Reader (Statistics)** (against leave vacancy)
Statistical Quality Control, Probability Theory, Multivariate Analysis.

(vi) **For the Lecturer (Mathematics)** (2 posts, One Permanent & One against Leave vacancy)

Post No. 1
Elasticity, Fluid Mechanics, or Differential Equations and Functional Analysis.

Post No. 2
Numerical Analysis or Computer Programming.

(vii) **For the Lecturer (Assamese)** (against leave vacancy) 'Assamese Literature' (Group 'A')

(viii) **For the Lecturers (Applied Geology)**
Minerology and Petrology/Statistical Geology/Geological Mapping/Geological Prospecting/Economics Geology/Engineering Geology/Mining Geology/Mineral Technology/Mineral Economics/Petroleum Geology.

(ix) **For the Lecturers (English)**
The posts are open.

(x) **For the Lecturer (Deptt. of Education**

(i) Specialisation in English language preferably trained in Teaching English as a foreign language in any Institute Centre of foreign languag teaching in India or abroad.

(ii) B.T. or M. Ed.

Nine copies of applications for the post of Professor and seven copies of applications for the posts of Readers or Lecturers in plain papers giving full bio-data including (1) Name in full (in Block Letters), (2) Father's name, (3) Date of birth, (4) (a) Permanent address (b) Present address; (5) Present occupation, if any, (6) Present salary drawn, if any, (7) Detailed academic career from Matriculation onwards showing Division/Class, aggregate percentage of marks, School/College/University from which appeared, (8) Details of appointments held with designation, duration, nature of works and name of employers; (9) Research contributions with copies/reprints, (10) Name and address of two referees not related to the candidate together with an application fee of Rs 5/- (Rupees five) drawn in favour of the Registrar, Dibrugarh University, should reach the undersigned on or before **25-8-1980**.

The number of this advertisement and the name of the post applied for must be referred to in the application. Persons already in employment should apply through proper channel or with a 'No objection certificate' from the present employer. All reprints of the research papers published must be attached. Applications not in conformity with the above requirement will not be entertained. **Persons who had already applied against the posts at Serial Nos. 1,2,10,11 and 12 in response to our Advertisement No. 8/79, need not apply again.**

Candidates will be required to appear at an interview if and when called for, and will be given actual Railway fare according to the rules of the University.

D. Pathak
REGISTRAR-IN-CHARGE

MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE

M.A.C.S. Research Institute
Law College Road,
Pune-411004

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Editor : ANJNI KUMAR

Functioning of IITs

P. V. Indiresan*

There have been in recent weeks a couple of detailed criticisms of the manner in which admissions are effected to the undergraduate courses in the Indian Institutes of Technology. Currently, out of about 50,000 applicants, less than 1500 can succeed in getting admitted to the IITs. Consequently, whatever be the method of selection almost all the aspirants will have to remain disappointed. This has made out to be a flaw; it could also have been said that a system which attracts so many aspirants in spite of the very low probability of success and the very severe hurdles involved, should possess some exceptional merit.

No selection procedure can be absolutely perfect. However carefully it is planned and however honestly it is implemented; it will always happen that a few deserving cases will be left behind and a few notso-well-qualified skip through. However, the goodness of the system lies in minimising such errors. The exceptionally good preformance put in by the IITs year, after year almost without exception, indicates that the system that we have evolved over the year has been good enough to select really bright students.

A second feature that one looks for in any selection process is that it should be able to discriminate between the acceptable and the non-acceptable. Last year, in one of the neighbouring States, the cut-off point for admission to one of the Engineering Colleges was an aggregate of 93 per cent. This is typical of a system which provides very little discrimination because, quite obviously, there will not be much to choose between those who got 92.5 per cent or even 90 per cent from those who got 93 per cent.

In the IIT Entrance Examination, however, the cut-off point is around 45 per cent with only 25 per cent as the minimum required in individual subjects. It is the measure of the severity of the test that, in spite of these very liberal requirements, barely 3 to 4 per cent of the candidates qualify.

This should also lay at rest the criticisms that have been made that the IIT Entrance Examination has become stereo-typed and ineffective. If it were so, virtually everybody should have done well. Obviously, there is something in the quality of the questions that we set, that in spite of the fact that these examinations have been held for nearly 20 years now, they are still manageable only by the very brightest.

Much has been made of the fact that many of the candidates go through coaching classes of various types. The utility of these coaching classes is only to the extent that they induce a discipline among the aspirants to work steadily and practise regularly. Any person— and there are many such examples— can get through the IIT Entrance Examination provided he is bright enough and provided he practi-

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**Director, IIT, Madras.*

ses systematically. It is not everybody who has the temperament for such detailed and systematic practice and particularly without an external stimulus. Strictly speaking, these coaching classes merely provide such an external stimulus only. They are useful from this point of view, but, by no means, are they essential.

A criticism has also been made that the Entrance Examination of the IITs makes it necessary for youngsters to slog for months and months. Perhaps, one could argue that any system that makes people work, makes a commendable contribution to the growth of the society. Unfortunately, work, and particularly hard work, is rather unfashionable these days. Nevertheless, it must be stated that study in an IIT is not a picnic. A student has to work for hours day after day, week after week, month after month, for the full period of five years. Those who do not have stamina or the temperament for such a hard effort are really not suitable for admission to an IIT. If we do not have such a rigorous training programme which involves writing over 200 examinations during the period of the undergraduate course, our graduates will not be as good and as well-recognised the world over as they are at the present time.

There has also been a slight innuendo that we have an interview. Somehow or other, a feeling has been sought to be created that some hanky-panky goes on because of this interview. This shows a total ignorance of the entire system of admission. The purpose of calling the applicant is not to value him in any manner whatsoever. Such a valuation is completed on the basis of the written papers alone. The boys are not interviewed; they are only called for counselling in order to explain to them what are the various opportunities that are available and what are the probable chances open to them at the level of their individual performance. Such a counselling, in our opinion, is absolutely essential because most of our aspirants have very little knowledge of the nature and the prospects of the different engineering disciplines. The selection is made entirely and purely on the basis of the marks obtained; on the basis of his rank, the individual student is free to choose, without any restriction whatsoever, whatever courses are still open. This is a point on which the public must feel totally assured and we hope that the very positive purpose of this counselling scheme will be appreciated by one and all.

Then, a bogey has been raised that the admission to the IITs is mainly for the rich. It has been said that the rich cannot pass through the gates of heaven. Maybe they can, maybe they cannot; but we do know that the rich do not get through the gates of IITs—we have no Birlas with us. Subjects like mathematics, physics and chemistry are culture free and, if a comparatively large number of middle-class aspirants get through, it is only because they have a family background of academic discipline which is so essential for proficiency in these sciences. It might also be added that the 25 per cent marks that is required for English is for qualifying purposes only and are not counted in determining the rank of the student.

There have been repeated accusations against the IITs that the kind of training that is provided is not suitable for Indian conditions and meant only for the developed countries of the world. This is factually incorrect. The objective of our education is to train good research, design and development engineers and our training is definitely as useful in the higher technological institutions of our country as they are elsewhere.

Unfortunately, the emoluments and the status of the research scientists in our country is extremely low. An IIT Professor at the culmination of his career after three decades of toil, earns less than a young Sales Manager who is still in his twenties. Thus, our society in its wisdom has decreed that the academic and the research scientist has a value much less than that of the box-wallahs of Indian commerce.

In such a situation, it is but natural that our students, being very bright and having the ability to compete, opt for such careers and seek such positions which the society itself considers as more important and more valuable.

The fault is therefore not that there is something wrong with our training but that our society does not want to value it properly. If any of our boys is still very eager to pursue his professional interests he finds that while he is most welcome in the United States and received there with open arms in his own country he is treated as a second-class citizen and condemned to a life of general poverty. Thus he is not only attracted towards the famous laboratories of the world, he is also effectively repelled by those of our own.

In the 1920's and 1930's there were many leading luminaries in the legal profession who sacrificed their lucrative careers to serve the wider needs of the country. In a similar manner, those of our graduates who by choice prefer to stay in our scientific institutions are making an identical kind of a sacrifice. Frankly, it is a matter of doubt whether the way our society is organised, it deserves such a sacrifice.

It has been said that the IITs have been overstuffed with resources and equipment. However, strictly speaking, by international standards, IITs are and are going to remain, badly under-equipped. Even IIT Madras, which has around Rs. 10 crores worth of equipment in its laboratories, finds that more than half its resources are more than 10 years old and obsolete. Against this very huge investment, the resources available to it for replacement is barely Rs. 6 lakhs a year. But for the fact that it is able to secure fairly substantial research contracts from organisations like the Department of Science and Technology and the Ministry of Defence, its position will be very pitiable indeed. Those who are talking about the wealth of the IIT are doing so in ignorance.

We are well aware of the kind of perverseness that burns buses because there are rather so few of them. There is an intellectual equivalent of this kind of perverseness and that attempts to destroy those institutions just because they are doing well. Heaven knows, what a daily struggle it is to maintain the standards we have so assidouly built up. We earnestly beseech the support of the public in this difficult and necessarily unpopular task.

[*Courtesy*: *The Hindu*]

Role of Colleges in National Integration

V.S. Mathur*

When a vast country like India with an area of about 33 lakh sq. kms. and with a population of about 65 crores becomes politically free after a long period of the foreign policy of divide and rule, it becomes imperative that all schemes of reconstruction specially on the cultural and educational side, should increasingly work towards bringing about alongwith political unity, good amount of intellectual and academic homogeneity. It is natural that a large political entity like India should have within its boundaries diversity in religion and language, but it should be possible for all the diverse elements to meet on a common platform of corporate effort. Various languages are spoken and a conflict often arises between their claims to be the national medium of expression/instruction. We have to acknowledge the fact that each of these languages is an expression of the culture of its people and to bring these groups together, it is necessary that a fair acquaintance of the cultures behind the various languages is created during the educational career.

The Indian spirit

All of us call ourselves 'Indian' and 'educated' and yet we know so little of the achievements of Indian outside our own state and our own community. I often wonder as a person who has for long years lived in Punjab (now Punjab and Haryana) as to how much does a Punjabi know of Tamil or Telugu or Bengali or Maharashtrian poets and writers and thinkers past or present. Tamil literature has delicate beauty of its own which is far famed. Bengali literature is said to be a treasure house of charm and beauty, enriched by the achievements of writers like Ravindranath Tagore and Bankim Chander Chatterji. Coming nearer home one wonders how much does a Punjabi or a Haryanvi or a Kashmiri know of Nursi Mehta or of Goverdhan Ram Tripathi of Gujarat. And conditions are no better anywhere else in the country. Even the exponents of Hindi and Urdu have been at war path although there are no two languages in the world which are so close to each another in the matter of vocabulary and thought.

I am quite sure that it must be a very defective system which has not been able to awaken, centres of response, in the intellectual make up of an Indian, to what our countrymen in other parts of India devoutly honour and adore. Indians living in different parts are ignorant of all that is great in other literatures and histories and yet we claim to belong to the 'Indian nation', which aspires to derive the fullest benefit of the political freedom it has achieved. Language, literature and culture go together and they are the best media of bringing about intellectual unity atleast amongst the elite of a country. And certainly it is the elite which should really spearhead any movement for nation building. Such noble sentiments and feelings should always filter down to the masses in due course.

And then let us come to 'religion' which apparently has only helped divide the Indian people. But is it not possible for us to meet and unite on the platform of a 'common appreciation'. Religion, culture and politics have in my opinion, affinity which has not always been recognised. History contains a large number of instances of nations being built of elements uniting in a common endeavour to understand, to appreciate and to revered the culture and civilisation of the component groups. This appreciation of each other's point of view should certainly furnish the adhesive element which should ultimately bind groups together.

It is, therefore, said that inspite of all tall talk about national integration, we have so far taken no definite steps to usher in this phenomenon at the intellectual level. The recommendations of the Sampurnanand Committee Report provide only routine and ad hoc steps which have been already forgotten. The NCERT are having some type of programmes like the inter-state camps for school students and teachers. They also constituted a panel of experts to give the matter some thought but with no tangible results so far. However, no work has been done and no programmes have been thought out for the higher levels which in my opinion should be the main point of our attack. The people who are studying in colleges and universities today will eventually from the intellectual elite of the country and unless and until proper foundations and attitudes are laid in their mental make-up through a good acquaintance with the history and intellectual achievements of the important communities inhabiting India, all our efforts are going to misfire.

The programmes

This in my opinion can be done through two or perhaps three programmes at the college level, and below I present for the consideration of those concerned with higher education, these points. What I present may not be new but certainly they always bear repetition and re-emphasis.

(1) Our language books at the college level usually confine themselves to selections from the writings of poets and writers only from the concerned language. For instance when we open any text-book in Hindi we only find selections from renowned Hindi poets and writers like Mahadevi Verma, Nirala, Sumitra Nandan Pant and Munshi Prem Chand and others. This is a very narrow view of presenting literature. And this only gives the idea that perhaps

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Hindi poets and writers are the only famous people in the field of Indian writing and thought.

I would, therefore, suggest that all language text-books should present an overall view of Indian literature and must have properly translated pieces from the writings of poets and writers in other Indian languages. Similarly we should have some material original or specially prepared about the national thinkers like Mahatma Gandhi, Jawaharlal Nehru, Abul-Kalam Azad, Tagore and Vinoba Bhave. My idea is that during the three years of the B. A./ B. Sc. Course sufficient acquaintance and appreciation of Indian literature as such should be created.

The present position of having no languages for B. A., B. Sc. students in many places has to be discontinued. I may not insist on this at the post-graduate level because there they have to put emphasis on the particular literature. Every student at the under-graduate level studies English and mother-tongue and through these two media it should be possible to give desired appreciation and understandings. It is, therefore, necessary that we expeditiously revise our language text-books from this point of view. Even English text-books may contain translations from language writers.

(2) In many universities of India today we are having a compulsory subject at the under-graduate level that goes under the title of 'General Education'. In actual practice, it only means giving some scientific knowledge to humanities and art students and about humanities to the science students. It might have some utility in a country like USA from where we have borrowed it, but experience shows that it has served no useful purpose in India. In its place I would recommend the creation of a subject called 'Indian Culture' as a compulsory branch of study at the under-graduate level as well as at the lower levels. This subject will emphasise not only the knowledge but an affinity between cultures and the literatures of the important communities inhabiting India. At the school level this orientation could be had through language and social studies but at the college level, it should be a compulsory course of studies for all.

Hindus and Muslims are the two main communities living in India. Hindus claim the status as the original inhabitants of the country; but with the passage of time more and more people came to live in India and got mixed up with the original inhabitants. Although some of them like Muslims have kept their separate religious entity, but they have got mixed up with the local elements to an unrecognizable degree. Other sects like the Sikhs, the Jains and the Buddhists are all offshoots of the main Hindu stream. Christians are people who came under the influence of foreign missionaries who spread out all over the world to convey the message of Christanity.

Muslims originally came as invaders but a large number of them stayed back and after living with the people have assimilated themselves to the new surroundings which in turn has reciprocated to this new contact. Indian history is replete with instances of cultural and other occupations which they laboured jointly with Hindus and others and continued their efforts with devotion. There is something contageous, and there has always been a tendency to blend itself with the surroundings. Such processes have operated very well in Indian history and it should be a very interesting subject of study for young college students. There has been a very evident cultural continuity in India and its evidences are found all over. The cultural history of India shows that during the long space of Indian history, cultural ideas have travelled back and forth throughout the country, and "eventually they took roots in the Indian soil and came to flower in a typical Indian way of life".

It is suggested that the various universities better with collaboration with and under the aegis of the U.G.C. and other such agencies, could give serious thought to this problem and formulate outlines and the content-matter of this new subject.

(3) And naturally the question of the medium of instruction at the college level always comes pertinent when talking about national integration. We learnt English quite well because it has for long been the medium of education in Indian schools and colleges. Our standards have gone down because we deprived it of this position. Hindi cannot be learnt well unless we make it the compulsory medium at some stages of education all over the country. The school stage is not the correct stage for this when the mother-tongue should be emphasised alongwith the sincere implementation of the 3-language formula, but at the college stage we have to move boldly and have to have one common medium all over the country or perhaps it may be more feasible to have one more alternative in English but no more, and that too for a short time.

We could perhaps encourage the use of Hindi by giving extra credit to persons taking Hindi as the medium of examination not only at the university examinations but also at the all India competitions, where there seems to be no defecto place for regional languages as the medium. Eventually I am sure the craze for English should die out. It must be understood and understood atonce that we should not talk or think of national integration in an atmosphere where regional languages predominate linguistic 'pluralism'.

(4) Another innovation that could be useful is to have language clubs in all colleges where other Indian languages should be learnt, understood and spoken in a congenial atmosphere. In every locality where colleges are situated there are a few persons belonging to other states and their part-time services could always be had for these clubs on some remunerative basis. Expenditure on such clubs should be made an appropriate charge on the college pupils' funds. My experience shows that there are such people available even amongst the students of most colleges and amongst their staff.

(5) A periodic exchange of staff and students on institutional basis can also prove very effective. This exchange can be done either as a part of the teaching programme and also as a part of our co-curricular

(*Continued on page 412*)

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Redress of Grievances in Universities

Rajinder Singh*

The university campuses all over the country are frequently disturbed when the demands submitted by its various components—students, teachers and members of the non-teaching staff—are not redressed expeditiously, or when these are not met according to their satisfaction. This is happening despite the fact that there exists in almost all the universities *some kind of rules* governing the conduct of students, teachers, and members of the staff, as also *some kind of* machinery to resolve various conflicts. Surprissingly enough, their demands and grievances are not only mounting day by day, these are also evading solutions. This situation has vitiated the entire atmosphere and in consequence has brought about indiscipline and perturbations, greatly hampering the smooth and orderly functioning of universities.

The handling of grievances to the mutual satisfaction of all the three sections of the university community has, therefore, assumed great importance and urgency. The Gajendragadkar Committee on Governance of Universities and Colleges has also recognized the seriousness of the problem and recommended that an adequate machinery to deal with the grievances either of students or of teachers or members of the administrative staff in respect of all matters—academic or administrative—should be devised by the universities themselves. The Committee has further suggested that the machinery should be so devised that all persons concerned should have confidence in its impartiality and independence, so that the ultimate decisions reached by the final authority within the framework of such machinery are regarded as satisfactory by everyone.

Concept of grievance

Grievance is a feeling of dissatisfaction, whether expressed or not, whether valid or not, that a person thinks, believes or even feels, is unfair and inequitable. It is a subjective feeling of 'wrong' and exists in the mind of an individual. It represents a situation in which one party (the aggrieved) feels that he has not been treated fairly by the other party against whom the grievance is felt. A grievance can be real and genuine, or it can be imaginary and false or even ridiculous.

When anything disturbs a person, he becomes dissatisfied; when this dissatisfaction assumes some importance for him, he is prompted and files a complaint; and the grievence is a complaint that develops and moves into formal procedural channels.

Need for avenues for redressal of grievances

When a grievance is expressed, or a feeling of dissatisfaction is brought to surface, it is expected of the authorities that they will do something to redress the grievance and remove the cause of dissatisfaction. The aggrieved parties resort to strikes, or similar disruptive actions, primarily to draw attention of university authorities to their problems. It is believed that if satisfactory avenues are provided for redressal of grievances, the need to resort to such acts may be avoided, because the amicable settlement of grievance is all the more necessary if the universities are to maintain efficiency, congenial working atmosphere and good relationship among students, teachers, members of the staff and the university authorities.

The university authorities should, therefore, feel concerned about all kinds of discontent, regardless of their opinion as to the validity of grievances. They should have a system by which they are forewarned about the unexpressed dissatisfaction, as well.

Nature of grievances

The grievances put forward by the members of the non-teaching staff relate mostly to their working conditions, promotions, confirmations, disciplinary action, suspension and termination, fixation of seniority, fixation of pay, regularization of temporary staff, expeditious payment of honorarium and other dues, overtime, adverse entries in their confidential records, transfers and postings, sanction of leave, medical facilities, housing facilities, participation in decision-making processes, delay in the implementation of decision, and so on.

The grievances ventilated by the teachers relate to their working conditions, appointments, fixation of pay, fixation of seniority, confirmations, regularization of their temporary service, academic freedom, deputations, participation in seminars/conferences, grant of study and sabbatical leave, adequate funds for research work, facilities for housing and medical, treatment, increased representation of teachers on the decision making bodies, delay in the implementation of decisions, etc.

The students submit their representations/complaints dealing with admissions, examinations, courses of study, teaching, research and library facilities, hostel and mess facilities, grant of scholarships, freeships and financial aid, sports and other extra-co-curricular facilities, medical facilities, representation on the decision-making bodies of the university, delay in the implementation of decisions etc.

Avenues for redressal and their shortcomings

In most of the universities, evidently, there is no *proper or formal machinery* for redressing of grievances or a system envisaging a continuous exchange of ideas between students and teachers, and between students or teachers or members of the staff and the university authorities. No conflict resolution committees have been constituted first to ascertain difficulties of students, junior teachers or members

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of the non-teaching staff and then to solve them in time before a campus is resounded with the rumblings of disruption. The other side of the picture is equally illusive: wherever such committees exist, they have been working in a most casual fashion. Students, junior teachers and staff members have very little or no representation or say in the commitees which have been constituted to take decision on matters concerning them. These committees meet only when peace on the campus is disturbed. Authorities wake up from their slumber to listen to the grievances only when their complacancy is shaken by the direct action and disruptive activities resorted to by the employees and students. Even then ad-hoc decisions are taken under duress without looking into all aspects of problems and without solving the fundamental issues involved. Such adhocism, thus, leads to adverse reactions of even greater dimension.

Innovations for better avenues

From the foregoing, it is clear that the existing avenues of redressal of grievances for improving efficiency, raising of standards of teaching and research, for restoring peace on campuses and for smooth and orderly working of universities, need to be looked into afresh. In order to create among students, teachers and staff members, a sense of belonging to the institution in which they are working, which unfortunately is lacking at present, the introduction of some innovative system is urgently called for.

The main issue is to bring dissatisfaction to the surface without an agitation rocking the campus. There are various channels that can be designed to achieve this purpose. The most desirable and workable channel, through which the university can become aware of grievances is a machinery which should provide for continuous exchange of ideas and a properly constituted Grievance Procedure which may be defined as a form of grievance settlement process in which the grievances are processed through one or more stages.

A properly constituted grievance procedure can help the university in many ways. It will minimise eruption of discontent and dissatisfaction. It will exercise check on the arbitrary action of the authorities and will also serve as a feedback.

The following five basic steps are necessary for the proper handling of a grievance:

1. Receipt and defining the nature of grievance
2. Obtaining the facts
3. Analysis and taking of a decision
4. Implementation of the decision
5. Follow-up

It is very desirable that delay should be avoided in the implementation of decisions taken by various authorities and bodies of the university. While processing grievances, if it is established that the rules/regulations etc. need change, there should be no hesitation in considering such modifications/changes as are found to be necessary in order to achieve the objective of streamlining the administration.

The opinion of the concerned section of the university community should be sought on the draft rules in regard to matters concerning it. The opinion so obtained should then be duly considered by the appropriate authority before the rules are finalised.

The representatives of students, teachers and staff members should also be associated with the committees dealing with various aspects of university life, such as housing and accommodation, medical facilities, canteen and shopping facilities, campus development, sports and extra-curricular activities and other welfare schemes. Such association will curb the tendency on the part of various communities/individuals of making complaints or putting up demands which have no basis whatsoever.

Redressal of grievances of employees

The significance and importance of the role of teachers in the functioning of a university needs no emphasis. Also, for its efficient and smooth functioning, the members of the non-teaching staff have equally an important role to play. Admittedly, in such a situation it is important that the grievances of teachers and non-teaching staff members should be solved through mutual consultations and discussions with the authorities.

The aggrieved person may first approach the Head of the Branch/Department/School/Faculty concerned in regard to his grievance. The minor grievances can be solved at this stage. If the complainant does not feel satisfied or the grievance is of a serious nature and is outside the purview of the Head of the Branch/Department/School/Faculty, the person concerned may file his complaint with the Registrar/Vice-Chancellor who will transmit it to the Branch concerned. An acknowledgement of the grievance may be sent to the aggrieved party, and he may be informed of the time likely to be taken in arriving at a decision on his grievance. The grievance may then be processed in accordance with the five basic steps mentioned above, and the decision when taken may be communicated to the aggrieved party. Most of the problems are likely to be solved at this stage.

If the aggrieved person, or a group of persons, is not satisfied with the decision, the grievance may then be referred to the Grievances Committee. There may be two separate committees, one for members of the non-teaching staff called 'Non-Teaching Staff Grievances Committee' and the other for the teachers called "Teachers Grievances Committee". The constitution and terms of reference of these committees may be as under:

(a) Non-Teaching Staff Grievances Committee

Chairman : To be nominated by the Vice-Chancellor
(preferabley Pro-Vice Chancellor/Rector)

Members : (i) Three Representatives of the Staff Association.
(ii) Two persons to be nominated by the Vice-Chancellor.
(iii) Registrar—Ex-officio.

(iv) Finance Officer—Ex-officio.
Secretary : Dy. Registrar.

Terms of Reference

1. to entertain grievances and petitions from staff members in respect of matters affecting them individually or as a group;
2. to enquire into grievances, and make recommendations to the authorities concerned for their redressal or suitable action;
3. to recommend appropriate action against complainants, if allegations made in their representations are found to be baseless;
4. any other matter which the Vice-Chancellor may refer to the Committee.

(b) Teachers' Grievances Committee

Chairman : To be nominated by the Vice-Chancellor
(preferably Pro-Vice-Chancellor/ Rector)
Members : 1. Three Representatives of the Teachers' Association.
2. Three persons to be nominated by the Vice-Chancellor.
3. Registrar—Ex-officio.
Secretary : Deputy Registrar.

Terms of Reference

1. to entertain grievances and petitions from teachers in respect of matters directly affecting them individually or as a group;
2. to enquire into grievances, and to make recommendations to the authorities concerned for their redressal or suitable action;
3. to recommend appropriate action against complainants, if allegations made in their representations are found to be baseless;
4. any other matter which the Vice-Chancellor may refer to the Committee.

The meetings of the Grievances Committees may be held at least once a month. The action on the report/recommendations of the Grievances Committees should be taken expeditiously as per decision of the authorities concerned.

Redressal of grievances of students

If we go into the history of grievances of students, it will be noticed that most of them are of minor nature and stem from misunderstandings. The causes of these grievances can, therefore, be removed if handled properly by holding mutual consultations. However, if the grievances are allowed to persist, even the most minor one can flare up and take the form of a major disruption.

Again, most of the causes of dissatisfaction and grievances of students (which relate to admissions, examinations, courses of study, teaching and financial aid etc.) arise out of the absence of a continuous dialogue with them. Their removal can be sought and obtained by providing opportunities to students to participate in the deliberations of academic and other bodies of the university. It may be pertinent to quote here, the following recommendations of the Gajendragadkar Committee on Governance of Universities:

> "In addition to a constant dialogue between teachers and students in respect of all matters of University activity, an institutional machinery for consultation of student opinion and ensuring student participation should be established in each University."
>
> "The students should be encouraged to give their thought to important academic questions like structure of courses, pattern of instruction and examination."
>
> "The student participation helps in developing in the students, a sense of belonging to the University, which is very essential for the successful working of the University. It creates among the students, a greater sense of responsibility, help in developing their personality, enables the teachers to benefit from fresh ideas of the youth and also serves to make the education system responsive to the urges and challenges of the society."
>
> "It is in the interest of the university as well as of the nation that tomorrow's leaders should adequately understand the problems of the Management of the University."

The above recommendations bring to sharp focus the need that the students should be provided opportunities for participating in the deliberations of the following bodies of the university.

1. Student-teacher committee at the centres/departments level

This committee may consist of equal number of students and teachers. The ideal size for this Committee will be 5-6 students and equal number of teachers.

2. School/faculty level committee

In addition to Professors and Heads of Centres/ Departments who will be ex-officio members, at least one Reader, one Lecturer and one student from each Centre/Department may be represented on this Committee.

3. Academic Council

In addition to the President and the Secretary of the Students' Union, who will be ex-officio members, at least one student from each school/Faculty may be represented on the Academic Council of the University.

4. Court

In addition to the President, and the Secretary of the Students' Union who will be ex-officio members, at least one student from each School/Faculty may be given representation on the Court of the University.

The representation of students on the above bodies may be a blending of direct election and nomination by the Vice-Chancellor, the latter being on the basis of performance of students in their studies, sports and extra-curricular activities.

In the above bodies of the University, the students should be free to discuss all matters except the following:

(a) Actual process of evaluation,

(b) Recruitment and appointment of teachers.

The experience of participation of students in such bodies has been very fruitful in some of our universities.

The students should also be granted representation on Students' Aid Fund Committees, Freeship Committees, Hostel and Mess Committees, Sports Committees, etc.

In addition to the above, there should also be a Grievances Committee with the following constitution and terms of reference for the redressal of all kinds of grievances of students:

Constitution

Chairman: To be nominated by the Vice-Chancellor (preferably the Pro-Vice-Chancellor/Rector)
Members: 1. Three Representatives of the Student's Union
2. Three teachers to be nominated by the Vice-Chancellor
3. Dean of Students — ex-officio.
Secretary: Controller of Examinations (or Coordinator-Evaluation/ Dy Registrar)

Terms of Reference

(i) to entertain grievances and petitions from students in respect of all matters affecting them individually or as a group;
(ii) to enquire into the grievances, and make recommendations to the authorities concerned;
(iii) to recommend appropriate action against the complainants, if the allegations made in their representations are found to be baseless;
(iv) any other matter which the Vice-Chancellor may refer to the Committee.

The aggrieved student may in the first instance approach the Head of the Department/Centre or Incharge of the student activity to which the grievance relates. The minor grievances arising out of misunderstandings or otherwise are likely to be dealt with satisfactorily at this stage. If the student does not feel satisfied with the decision, he may appeal to the appropriate Committees/ Bodies of the Department/Faculty/School/University concerned. If he still feels that he has been denied justice, he may appeal to the Chairman of the Grievances Committee. In can be reasonably hoped that most problems of the students would be solved through this process.

Necessary conditions for implementing the system

It needs no emphasis that problems and grievances should be handled with great imagination and tact. The decisions arrived at after full consideration and consultation, should be implemented with firmness and swiftness. No decisions should be taken or altered under duress. The general impression that the authorities accept demands when direct action is resorted to or it pays when rules are broken should be removed. Any leniency in this regard can be a demoralizing factor for the administration and cause a great damage to the smooth functioning of the university.

The grievances should be analysed with care so that anticipatory steps could be taken to prevent recurrence of grievances of general nature. The previous decisions should be properly classified so that these may be readily available for reference as and when required.

The stand of the authorities in regard to vital problems should be widely publicised for information of all sections of the university community. Their cooperation should invariably be sought for solving major problems facing the university. The channels of communication should be kept open, active and receptive.

In conclusion, it may be stated that no system however carefully designed, can be perfect. The proposed system should, therefore, be constantly kept under review and the changes be made in its functioning in the light of the experience gained. □

Role of colleges in National Integration

(*Continued from page 408*)

programmes. Under the first programme colleges could exchange teachers and students for certain periods of time and any extra expenditure could be met out of the college funds. It will, however, be better if this exchange is done at the governmental level and some financial assistance could be available to meet the extra expenditure. But this can be possible only, if the medium all over is common.

(6) Even individual institutions could keep a very close liaison with similar institutions in some other states. In due course, this may develop into an exchange of groups of students and teachers for hikes and community camps etc. We should not wait for any official programmes in this direction but utilise our own resources at the college level and formulate our own programmes.

Epilogue

While concluding it may be emphasised that all our efforts for bringing about national integration are not going to reach the required level of success unless they are dealt with at an intellectual level for which the three years of the B. A./B. Sc. course seem most suitable. This stage will eventually provide leadership in thought and action and very soon enough agreement could be nourished to premeate a deep feeling of common unity and of belonging to common land amongst the vast population of India. All movements, cultural, literary or even political, are anywhere and everywhere spareheaded by a few devoted individuals under whose leadership and banner the common man assembles. There is, therefore, a great need to have some fresh thinking on this important national leadership aspect of higher education. □

CAMPUS NEWS

BITS launches ME (Collaborative) Programmes

Birla Institute of Technology and Science, Pilani has launched collaborative postgraduate engineering programmes. These are run at the Institute's round-the-year Practice School Centres. Each programme is of two-year duration, consisting of first year of eight courses and second year of internship. The collaborating organisations provide the main anchorage of help in terms of physical facilities, resource persons, stipend / out - of - pocket allowance for students, etc. Associating organisations augment these facilities by providing physical facilities, resource persons, stipend/out-of- pocket allowance for students, facilities for internship, etc.

In the first instance, discussions and indentification of professional goals clearly indicate the challenge and scope of such a joint educational endeavour in terms of the following functional and multidisciplinary branches of training.

(a) Project Engineering
(b) Industrial Production
(c) Industrial Development
(d) Educational and Research and Development Systems.

Minimum entry qualifications for M.E. (Collaborative) Programmes are described in terms of any Integrated First Degree of BITS (new scheme) with the condition that, in addition to all required courses of the Integrated First Degree, the full components of the complete packages of Core Science, Core Mathematics, Technical Arts, Engineering Science and Analysis and Application Oriented Courses should be taken, if not already done so. Actual admission may have to demand prior preparation beyond the minimum.

Any other equivalent degrees of other universities are handled on a case-by-case basis. Persons of high and proven professional standing are also treated on a case- by - case basis. Sometimes the technicality of the minimum qualification for admission may have to be suitably waived.

While admission and management of the Programmes is in the hands of BITS, the collaborating organisations are invited to participate in the student selection process. Further, collaborating or associating organisations or other organisations giving support to this programme are free to propose candidature of their own employees for the pursuit of this study under a general scheme whereby BITS as a consultant acts as an agent to find ways and means of upgrading the personnel of these organisations.

Jadavpur gets five lakhs gift

The Jadavpur University authorities have received a gift of more than Rs five lakhs from Mr Biren Roy, former Member of Parliament, for renovation of its radiocarbon laboratory for archaeological dating. The Vice-Chancellor of the university, Dr M.M. Chakravarty, said that Mr Roy had handed over the money to him at a function held in Calcutta recently. Of the total gift, Rs 1.5 lakhs were as capital grant from Biren Roy Trust. A recurring grant of Rs 36,000 per annum would be provided by the trust. According to Dr Chakravarty, Mr Shyamadas Chatterjee, the university's Emeritus Professor of Physics, who had set up the laboratory several years ago will develop it into a fulfledged research unit. The laboratory would be the first and only indigenous unit of its kind in the country. Dr Chakravarty said that the university had proposed to the State Government to open a medical faculty. The university authorities had also requested the Government to hand over to it Niramoy Polyclinic which the latter recently took over. The university proposed to develop the clinic into a unit for postgraduate medical research.

Gorakhpur organises seminar on Indian culture

A seminar on 'cultural renaissance in India—the role of litterateurs' was organised at Gorakhpur University under the auspices of the Agyeya Bhartiya Sansthan. Speaking on the occasion Dr S.P. Nagendra, Pro-Vice-Chancellor of the university said that the growth of culture depended on the creative minorities which included litterateurs, artists and philosophers. The vedas and upanishads, he said, represented the peak period of creativity and growth. Likewise, the epics, puranas, smrities and dharmashasthras represent the second phase of the growth.

Mr Sachchidanand Hiranand Vatsyayan 'Agyeya' who was the chief guest at the function said that before the 20th century, the litterateurs did not have to bother about their role in the cultural renaissance because at that time culture was not considered separate from religion. Those who believe in secularism in this country define religion in western perspective and feel that by being religious one is confined to the four walls of narrow thinking. Ridicuing the two extreme view points that the culture means luxury of aristocratic type of people on the one hand and on the other hand that bread perhaps is more necessary than culture, Mr Vatsyayan said that there was evidence that such people who did not feel economically and socially secure were more concerned about the culture and developed culture in their endeavour to establish certain values. Commenting on the Indian education system, Mr Vatsyayan said that in Indian universities independent and original thinking was not done and our educational system was such that thinking had become dependent on western base. If the litterateurs had the training of free thinking in their university days then whatever they would have produced would have been the culture. The moment we are able to liberate ourselves from the western or Indian 'rudhivad' and 'andh vishwas' the cultural renaissance will take place.

Kashmir organises seminar on Iqbal

The Kashmir University organised a three-day seminar on 'Quest for Identity and Iqbal' under the auspices of Iqbal Institute of the university. The seminar was inaugurated by the Chief Minister, Jenab Sheikh Mohammad Abdullah. Dr Rais Ahmad, Vice-Chancellor of the university, presided.

In his address the Chief Minister urged the need to pursue research studies on life, personality and teaching of Iqbal. He said the ideas of Iqbal are not beneficial to the youth of Kashmir only but are equally indispensable to the youth of India. He disclosed it is the influence of Iqbal's life, personality and teaching which led him to awake the masses.

The Iqbal Chair came into being in 1977 and later got converted into the present Iqbal Institute. The institute has an elaborate plan to spread the ideas and teachings of Iqbal and to encourage critical interest in a number of aspects of his works. The institute has been strengthened and its activities have been expanded by way of extension lectures and seminars. It has its own Board of Research Studies and has so far admitted eight scholars to pursue research studies. It is also proposed to publish a six-monthly journal, 'Iqbaliat'.

Hindi and Urdu through correspondence

In order to ensure availability of education to the common people in the State, the Institute of Correspondence Courses of the Kashmir University has expanded its programme of correspondence-cum-contact education. A course for teaching Hindi through the medium of Urdu and Urdu through the medium of Hindi has been started for those persons who are conversant with any of the two languages and also to make the people in general and teachers in particular bilingual. The institute is also trying to provide every possible facility to the students. A personal contact centre for law is being started at Baramulla where library facilities have recently been made available. It is hoped that the system of education through correspondence will go a long way in the universalisation of education.

Patna organises Prem Chand centenary celebrations

Mr Amrit Rai, son of late Munshi Prem Chand while inaugurating the birth centenary celebrations of Prem Chand in Patna appealed to the people not to drag his father in political controversy as his political themes had clear reflections in his writings. He was always with the common man and the downtrodden. He wanted the existing society replaced by a new and just one.

On the concluding day a symposium on the political views of Prem Chand and his crafts was held. Mr Bhairan Prasad Gupta and Mr Markandey Singh from Allahabad, Prof Chandra Ball Singh from Varanasi, Mr Sudhish Singh, Mr Karan Singh and Mr Manohar Singh from Delhi, Mr Irshad from Calcutta and Mr Khagendra Thakur, Mr Nagarjun and Mr Arun Kamal from Patna participated in the deliberations. An essay competition was also organised on this occasion.

U.K. to celebrate Prem Chand birth centenary

Seminars and exhibitions on the life and works of Munshi Prem Chand will be organised all over England as part of the celebrations of the birth centenary of the renowned Hindi writer. The Hindi Prachar Parishad founded by late Shri Balraj Sahni proposes to open book stalls in towns and cities to promote Prem Chand's literature. Prem Chan's grand son, Mr Alok Rai, is expected to attend these celebrations.

The Indian High Commission in UK has constituted a committee consisting of scholars and authors which include: Prof V.G. Kiernan and Dr R.S. Jogrcgo from the University of Cambridge; Dr Fakir Husain from the University of London, Middlesex and Dr Rolf Russel, Dr J. Mathews, Dr K.H. Qadiri, Dr C. Shackeel, Dr Ramdas Gupta, Mr S. C.R. Weightman and Mr R. Snell from the School of Oriental and African Studies, London.

Bihar takes over private colleges

Dr Jagannath Mishra, Chief Minister of Bihar, announced in the Assembly that the State Government had decided to nationalise all the 3,020 non-government secondary schools with effect from 2nd October, 1980. He also informed the House that the Government had decided to convert 112 degree colleges into constituent units with retrospective effect from April 1, 1978. Fifty colleges were converted into constituent units in the first phase and 47 in the second phase and the remaining will be done in the third phase. This decision would benefit about 41,000 teaching and non-teaching employees in the State.

HPAU to lay more emphasis on location research

The Indian Council of Agricultural Research has allocated Rs five crores to Himachal Pradesh Agricultural University, Palampur, under the National Agriculture Research Project to strengthen research activities on the campus. According to Dr R.S. Tanwar, Director of Research, HPAU, more stress will now be laid on conducting specific location research keeping in view the agro-climatic conditions of various areas in the State. He has recommended the setting up of five new research stations.

Summer institute for ground water exploration and development at BHU

Dr B.K. Baweja, Chief Hydrogeologist, Central Ground Water Board inaugurated the Summer Institute for Ground Water exploration and development organised by the Department of Geophysics of the Banaras Hindu University at Varanasi. In his address Dr Baweja said that interaction and exchange of ideas at the Institute would be of immense use to all who participate in the course and would ultimately result in the further advancement of various disciplines of science connected with surveys, investigations and quantification of the ground water resources. The following is the text of his address delivered at the inaugural function.

Water is essential for all living beings, including Man, for their existence. No life can survive without water. Water, therefore, is one of the most valuable natural resource. In historic and even pre-historic times. Man thrived in those regions of the Earth which had sufficient water supply. It is seen that ancient civilisations developed in river valleys where water was plentiful and readily available for use.

Water resources planning is essential to meet the increasing demands of growing population, expanding urbanisation, increased demand for food consequently requiring greater supplies for more agricultural production and rapid industrial growth all over the World. The resources of surface water alone are not adequate for economic growth of a country and have to be supplemented largely from ground water. The tendency for taking surface water as a major source of water supply is natural since surface water can be seen and the schemes for harrassing these waters by various means can be implemented easily. But actually less than 3% of the global fluid fresh water available at any given moment on the earth occurs in streams and lakes. The balance i.e. more than 97%—estimated at 8 trillion acre feet—is underground. Many ground water reservoirs have a capacity far greater than the largest artificial surface reservoir. It is, therefore. imperative to develop ground water resources as an important source of water supply for irrigation, industries, municipalities and rural homes.

Minerals do not occur in a haphazard manner. A particular mineral is always associated with a particular rock. So is the case with ground water—a natural resource of very great importance. Its availability is dependent on the geology of an area, rainfall—since it is a renewable resource, and various geo-morphological features. Scientific development of the ground water resources and their utilisation in a planned manner call for a correct estimation of the potential. Thus, hydrogeological surveys and investigations are of paramount importance in the location and estimation of the ground water resources. Geophysical and remote sensing techniques are important aids which a hydrogeologist utilises in ground water investigations.

Utilisation of a natural resource has two broad aspects (i) the estimation of the total quantity of the resource and (ii) developing suitable methods of harnessing to ensure maximum benefit. Unlike any other mineral resource, ground water gets annual replenishment from meteoric precipitation and this unique aspect of ground water resources ensures that if suitable methods are adopted and a balanced programme of utilisation is undertaken, a perennial supply can be ensured.

Of late ground water development has gained momentum not only in our country but also the world over to cope with the increasing demand of fresh water due to population expansion and industrial and agricultural growth. Thus we have constantly to look for new sources of ground water ensuring at the same time that the resource available is judiciously developed and utilised in planned and scientific manner.

The progress made in the country both in alluvial and hard rock tracts in respect of ground water surveys and nivestigations and consequent development of the resource are well known. Hard rocks occupy nearly 2/3rd area of our country. Of the total area of 3.28 million km^2 of the country, it has been estimated by the Central Ground Water Board (CGWB) that 2.8 million km^2 is coverable under ground water surveys. Of this, the CGWB had covered an area of about 1.6 million km^2 under regional hydrogeological surveys and an area of 0.6 million km^2 under its resource estimation programme by drilling over 3000 exploratory bore holes upto the end of March, 1980. Simultaneously it has established over 3000 hydrograph network stations spread all over the country for monitoring the behaviour of the water table and the quality of the ground water. The work of the Central Ground Water Board as also other sister departments e.g. the Geological Survey of India, National Geophysical Research Institute, National Remote Sensing Agency and State Ground Water Organisations etc., have opened new vistas in the development of the ground water resources not only in the alluvial areas but in several hard rock terrains of the country. The progressive increase of various ground water structures during the last 30 years bears testimony to this fact. In 1950 the country had 3.5 million dug wells, negligible number of shallow (50 to 60 metres deep) and deep tube wells (over 100 metres deep). The corresponding figures today are 7.72 million, 1.72 million and over 40,000 respectively.

Although much progress has been made in search for additional resources of ground water yet much remains to be done particularly in the hard rock terrains of the country and in drought prone areas. Since time immemorial, the hard rock areas were believed to be devoid of ground water or were supposed to be areas very poor in this resource. However, ground water picture although not very rosy in some of the hard rock terrains is also not as bleak as it had been made to be whereas much progress has been made to be whereas much progress has been made in search and development of ground water resources in the Sindhu — Ganga — Brahamputra basins of Extra—peninsular area, hard rocks of the peninsula have received attention in the recent past. It is fairly well known that the hard rock acquirers are not homogeneous whether in the vicinity of river and stream courses or in plains or uplands. In view of the great heterogeneous nature of hard rocks and their intricate acquifer geometry as compared to more homogeneous nature of the fluviatile deposits, location of ground water worthy areas in hard rocks is a very difficult and tedious process which call for the use of latest techniques in geophysical and remote sensing techniques. The Central Ground Water Board using geophysical and remote sensing methods and the National Geophysical Research Institute with the application of geophysical techniques have demarcated potential areas within the hard rock terrains of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu etc. where ground water development is feasible on quite a large scale. Tubewells constructed at sites selected on the basis of geological, hydrogeological, geophysical and remote sensing studies have given very encouraging results with tubewells yielding from 10,000 to over 100,000 litres of water per hour. This success could not have been achieved without resistivity and seismic geophysical and remote sensing surveys.

By 1968-69, the net irrigated area was approximately 29 million hectare (71 million acres) or about 21% of the net area sown. The 1968-69 level of irrigation was 17% above the 1960-61 level and 38% greater than in 1950-51. By 1978 an area of about 48 million h.a. (118 million acres) had been brought under irrigation. The contribution of ground water to total irrigation was about 40%. During the plan period 1978-83, an additional area of 17 million h.a. (37 million acres) is proposed to be brought under irrigation. Out of this 8 million h.a. would be through surface water, 2 million h.a. through lift from streams, ponds, lakes etc. and 7 million h.a. from ground water. It would thus be seen that ground water is one of the major source of water supply for meeting the irrigational requirements of our country. Besides, it is playing a very important role, rather a paramount role in meeting the water supply requirements of several hundred thousands of our small, medium and major industrial complexes, urban and rural areas. Of about five hundred and seventy two thousand (572,000) villages of our country about 300,000 do not have proper or safe water supply. For bulk of these villages, water supply would have to come from the ground water sources.

Based on the findings of various survey and research organisations, the user agencies have undertaken fruitful and large scale developmental programme of ground water resources. An institutional investment of Rs 5450 million was made during the period from 1974-75 to 1976-77 towards minor irrigation in the country. An additional amount of Rs 4220 million was incurred during the same period under the Plan sector outlay. In addition funds are provided for ground water development through Agricultural Refinance Development Corporation (ARDC), Rural Electrification Corporation (REC), Small Farmers Development Agency (SFDA), Integrated Tribal Development Plan (ITDP), Command Area Development (CAD), and Drought prone-area Development (DPAP). To achieve the additional irrigational potential under the Plan period 1978-83, it is estimated that an outlay of Rs 18,000 million under States Plan Sector and Rs 22,000 million under the institutional investment would be required. Under the Central Sector Scheme, the Central Ground Water Board had incurred an expenditure of Rs 200 million during the Fifth Plan period on hydrogeological, geophysical and remote sensing work and exploratory drilling in the country. With a view to further accelerating the tempo of its work the outlay for the plan period 1978-83 has been doubled.

In order that the expenditure is utilised to full advantage, correct assessment of the ground water resources of each area and scientific and planned development of this natural resource is of vital importance. Haphazard withdrawal of ground water and improper and un-scientific spacing of wells today may lead to serious consequences tomorrow.

Although much progress has been made in search for additional resources of ground water in the country yet much still remains to be done looking to the magnitude of our requirements of water both surface and sub-surface for various beneficial uses. Investigations and assessment of the resources cost comparatively little and the cost incurred thereon is worthwhile when the matter is examined and viewed in totality. While investigating latest techniques and tools available need to be utilised. However, in actual development of the resource, adoption of technology to suit country's needs and socio-economic environments should be taken into consideration to effect maximum economy.

Dr Hari Narain, Vice-Chancellor of the university while delivering the presidential address said without adequate rain-fall the total column of water appears to be decreasing in rivers but it exists underground which should be utilized through scientific ways while heavy rainfall, the water flows to ocean without proper utilization. We should try for better use of water through technology and geophysical tests. Thus we can increase quantum of production of green revolution. He remarked that Ganga valley alone can produce 300 million tonnes of foodgrains if we could make use of water scientifically. Both inflow and outflow of water should be checked through different resources. It will help in natural calamities such as drought and floods.

Aptitude test for PG engineering courses suggested

The Nayudamma Committee on Post-Graduate Education and Research in Engineering and Technology has recommended admission to post-graduate courses in engineering and technology to be made on an all-India basis through a test called Graduate Aptitude Test in Engineering (GATE) to ensure that only meritorious and motivated students are admitted to post-graduate programmes.

The committee, whose report has been placed in Parliament, has also suggested the setting up of a statutory "National Authority" to promote technological development through maintenance of high standards of engineering and technological education.

The committee, headed by Dr Y. Nayudamma, former Director-General of the Council of Scientific and Industrial Research, was set up in 1978 to review the progress made in the area of post-graduate education and research in engineering and technology and make recommendations for its further development.

According to the committee, the performance of about half a dozen institutions in the area of post-graduate education and research has been quite good mainly because of the deliberate efforts and liberal investments in promoting them.

In spite of the considerably lower inputs, about 20 other institutions had also done creditably well but the performance of the remaining 50 or so institutions was poor, though they also succeeded in developing certain areas and disciplines well. The facilities in many of these institutions were found to be inadequate.

The committee says that it has not been possible to attract sufficiently large number of bright people for post-graduate education and suggested that admission to these programmes should be restricted to those who come through GATE.

The committee wants the test to be held twice or thrice a year at widely dispersed centres. On the basis of the test a list of candidates found eligible for admission to post-graduate programmes should be forwarded to all institutions concerned. Those sponsored by industry or other institutions should also be required to go through this test. This procedure, according to the committee, will obviate the need for a candidate to appear in a multitude of entrance tests conducted by several institutions and help establish national standards.

Enhancement of post-graduate scholarships for M.E., M. Tech. from the present value of Rs 400 to Rs 600 per month has also been recommended. Fellowships for doctoral aspirants should be raised from Rs 500 to Rs 700 in the first year, Rs 800 in the second year and Rs 900 in the third year. The fellowship should be enhanced by Rs 50 after submission of the thesis and should be continued for three more months or till the "viva" was over, whichever was earlier.

The committee has found that the one-year post-graduate diploma courses have not been popular and successful and feels that they need not be offered as regular programmes unless they are specifically asked for and paid for by interested agencies. All existing post-graduate degree programmes which are out-dated, stereotyped and unpopular should be wound up.

The committee feels that in many emerging areas which are science-based, but heavily technology-oriented, there is need to train scientist-technologists who can handle the twin responsibilities of scientific research and innovative application.

A separate stream of post-graduate courses of three semesters duration after M.Sc. in Science should be developed on the pattern of M.E.-M.Tech. programmes.

The committee wants post-graduate degree to be prescribed as the minimum qualification for recruitment to many positions in the engineering profession in industry, R and D organisations, Electricity Boards, PWD, Posts and Telegraphs and Railways.

The committee urges collaboration between industry and post-graduate institutions. The tendency on the part of industry to look to the advanced countries for technical know-how should be discouraged. It suggests a research cess on each industry and tax deduction on investments to promote post-graduate education and research.

Fellowships for research in F.R.G.

The University Grants Commission has invited applications for twelve fellowships from Indian nationals, resident in this country, for advanced studies and research in a number of fields in the Federal Republic of Germany.

Three of these fields are Natural Sciences, comprising Physics, Chemistry, Zoology and Botany, besides Mathematics and Geology. Fellowships in these subjects are open to members of staff in universities and colleges. In the case of the fourth field, that is German language, the fellowships are open to Ph.D scholars of the language who are in an advanced stage of their research work.

The followships have been offered by the German Academic Exchange Service. Their tenure is for a year, with the possibility of extension.

The qualifications include a Master's degree with a first class at Master's or Bachelor's level and at least two years' professional experience. This does not apply to the subject of German Language.

The last date for applications for forms is the 10th of August. The completed forms are to be sent in by the 20th of August to the University Grants Commission.

Agricultural research workshop for NER at Gauhati

The Indian Council of Agricultural Research organised an agricultural research workshop in Gauhati for North-East Region. The workshop was inaugurated by Shri B.B. Lyngdoh, Chief Minister of Meghalaya and Shri G.C. Baweja, Adviser to the Governor of Assam, presided over the inaugural function. The subjects discussed at the workshop included: Role of ICAR research complex and approach to different research programmes like plant breeding, agronomy, horticulture, social science, entomology, plant pathology, agricultural engineering, soil conservation, animal husbandry and fishery.

Mr Lyngdoh, while speaking to the participants urged the agricultural scientists working in the five States and two Union Territories in the region to take their work as a challenge and to give their energy and time in evolving a viable and effective solution to the problems in agriculture of the North Eastern Region. He referred to the current movement in the north eastern region by attributing the economic reason as one of the main factors. If the research centre contributed something towards removing the difficulties of the people it would be a contribution to peace and harmony in the region. The Chief Minister felt that the utility of workshops should be linked thoroughly with development agencies particularly the State departments so far as development programmes, expansion and transfer of useful technology for farmers in hill areas were concerned. A workshop should be able to apprise where more research was needed and identify the useful technology developed by ICAR and other organisation which could be profitably applied in Meghalaya and other hill States and Union Territories in the region. He said the traditional system of farming had not undergone the required change with the development of scientific system of farming. As a result jhum cultivation which was predominantly practised in hill areas was causing more harm through soil erosion and denudation of soil fertility. Due to high rainfall and humidity the area is also having numerous pests and diseases which are seriously affecting the raising of good crops. Meghalaya which was deemed as the home of the Mandarin organges has now badly suffered from the citrus decline and over sixty to seventy percent of the orchards have become unproductive. The Chief Minister was glad that the ICAR Research Complex had developed an alternative system to replace them. He said that the work should be intensified and expanded so that those still practising this form of cultivation would have the scope to utilise this scientific alternative by adopting the permanent system of cultivation in these areas.

As there was a dearth of technical and scienific manpower, Shri Lyngdoh felt that farmers should be imparted with the necessary technical knowhow to enable them to implement the various development schemes thoroughly. In this connection social workers had a vital role to play in providing perpetual training and motivation to farmers. He also referred to the vast potentialities for the development of animal husbandry and fishery in the hill region of the north east. He said the region should get high priority in the research and development of animal husbandry and fisheries as the area has a potentiality for further development. He also made critical comments on the one-day or two-day research workshop which were undertaken from time to time in the region. In this connection he made particular mention of the research works which had been undertaken in the past to study the problems of the border areas of Meghalaya which had been badly affected by the closure of border trade with Bangladesh. He said these works of research had failed to come out with any conclusive answers to the problems of the people of these regions. He felt the agricultural scientists could in this regard undertake a serious study of the problems to enable the people to profitably make use of their local produce.

New scheme for promotion of science

A new scheme is being formulated for the sixth plan specifically for promotion of scientific interest in the youth. The Prime Minister, Mrs Indira Gandhi, said in Parliament that the Department of Science and Technology would organise activities under the scheme and in addition it was proposed to involve in the effort professional organisations such as the Indian Science Congress Association, the various academies of science and professional associations of engineers. The technology was proposed to be extended to State and district levels and the government had decided to encourage the development of State Councils on science and technology to act as focal points for planning, coordinating and spreading scientific activities. They could also provide funds for such activities.

The programme for generation and application of rural technology in operation in the Wardha District was in the nature of a centre of science for villages. Among other such projects were one on rural development in general with special reference to Chandrapur in Maharashtra and on biogas technology at its utilisation at Bombay, Nagpur and Ahmedabad. Tapping solar energy to provide drinking water in villages and solar grain drying for agriculturists constituted other activities.

Apart from the subsidies and tax exemption for research and development efforts, industries could get incentives in the shape of matching grants for activities connected with utilisation of renewable sources of energy.

Mrs Gandhi agreed with Dr Karan Singh that children's science museums in districts could help foster scientific spirit but emphasised that the demand for such museums must come from respective areas and they could not be foisted upon.

Himalayan snow to be investigated

The University of Roorkee has undertaken an ambitious research project on the Himalayan snow. The survey and photogrammetry group of the university is employing remote sensing technique using space pictures taken from Landsat satellite for determining the amount of snow accumulated in the winter season which would contribute to the river flow in summer months. The Indian Space Research Organisation is funding two connected research projects both depending on satellite data.

The university has a long tradition of research on water resources but not enough work has been done in the area of snow. The present project with Mr A.K. Bagchi as principal investigator and Dr K.G. Ranga Raju and Dr R.S. Tiwari as guides, aims to fill this gap.

Snow in the Himalayan region has diverse economic effects. Considerable portion of the utilised water is derived from melted snow. Conjunctive use of this water along with rain water plays a pivotal role in the management of water resources in north India. Another very important use of this snow melt forecast is to hoist advance warning on flood possibilities. A heavy snow melt mixed with monsoon may create havoc in the lower reaches of the river basin and a timely forecast of the amount of snow melt water in the river channel should be a help in controlling flood in the Ganga basin.

Upto December 1979 Landsat satellite pictures were to be purchased from USA spending foreign exchange. With the opening of ground station at Secunderabad under National Remote Sensing Agency it is now possible to procure these pictures on rupee payment. The ideal tourist spot Manali in Himachal Pradesh has been chosen for locating the snow laboratory.

Preliminary findings indicate that estimation of stream flow in these areas by remote sensing technique is at least as accurate as direct operational measurement in the field and that too at a nominal cost. Forecasting possibilities are also reasonably bright. It has been revealed that the maximum snowfall in the upper reaches takes places at a height of about 4,000 m above sea level. Above this height precipitation reduces gradually.

Prestigious gift for HAU lab

The Central Quality Testing Laboratory of Haryana Agriculture University will instal an automatic amino acid analyser, which is being gifted by the German Agency for Technical Cooperation.

The equipment costing about Rs 2 lakh is being gifted to Dr Kuldip Singh Dhindsa, head of the laboratory unit, in recognition of his outstanding research work in the field of improvement of the protein quality of cereals and pulses.

A recipient of the prestigious Indian National Science Award, Dr Dhindsa worked on a fellowship in West Germany for 16 months under the German Academic Exchange Programme.

The availability of the amino acid analyser, a gadget which has the advantage of speed, reproductibility and analytical accuracy, will prove helpful in the speedy achievement of the objective of evolving nutritionally superior varieties of cereals and pulses in terms of improved protein quantity and quality.

Dr Dhindsa says that the ultimate nutritive value is determined by the quantity and the amino acid composition of proteins.

Health development and education

The Centre for Adult and Continuing Education of the North-Eastern Hill University organised a three-day seminar on 'Health Development and Education' in Shillong. The seminar was intended to lay emphasis on the importance of health education to school and college teachers.

In his opening remarks, Dr E. Lyngdoh, Health Adviser to the Government of Meghalaya said that health was one of the major factors to boost up national productivity. Investment in health education and medical treatment of workers, he added, would offer greater returns on investment.

Dr P.D. Nigam, an eminent cardiologist from Delhi, who was the chief resource person at the seminar, gave an interesting and informative lecture on the hazard of smoking. prevention of heart diseases and drug abuse. According to him, heart diseases could be prevented if one reduced one's smoking habit and alcohol consumption. He maintained that regular exercises helped a person to resist against heart diseases. The result of such regular exercise habit would be better health and longer life.

A panel discussion on health education was also organised. Various ways and means for improving one's health were highlighted. Teachers, students and health workers were urged to actively involve themselves in health education programmes. It was also recommended at the seminar that subjects like health and sex education. child psychology, sanitation and population problems should be introduced in the school curricula with a view to popularising them among the student community for the very beginning.

Summer course in Geology

A summer course on Geology and Environmental Geology was organised at the Gauhati University under the auspices of the North Eastern Council. The course was attended by the postgraduate students from Gauhati and Dibrugarh Universities. Dr J. Choudhury, Vice-Chancellor of Gauhati University, presided over the valedictory function. Shri K.M. Mirani, Secretary, North Eastern Council, announced that the Council would provide the necessary support in order to strengthen the facilities of study, research and laboratory of the universities in this region in order to remove the shortfall in the sphere of higher studies on facilities like geology and mineral exploration. He also disclosed that NEC had made provision for such summer courses on mineral exploration as an annual feature to be sponsored by the North Eastern Council.

Dr. D.K. Ray, Adviser, NEC, explained the measure proposed by the NEC for expansion of research and training facilities to develop adequate number of trained manpower to man the expanding mineral exploration activities in the north eastern region.

N.I.S. to prepare States' profiles

The National Institute of Sports, Patiala, has decided to prepare the, sports profiles of all the States.

In a circular issued to all the liaison officers of the regional coaching centres run by the N.I.S. detailed information about the sports activity in their respective states has been sought.

The preparation of the profiles, has been ordered because of the regular criticism of the functioning of the various State Sports Councils, lack of playfields and sports equipment and facilities and the shortage of the sports scholarships and funds.

Each N.I.S. liaison officer will be required to furnish detailed information about the State of his posting (population, area and the districts). The games in which the State teams won first, second or third places in the National Championships, seniors, juniors and school games. Information has also been sought about the games and sports in which the States concerned does not participate in the National Championship.

The liaison officers will also be required to write the names of the President and the Secretary of the State Sports Councils, its effectiveness and the number of meetings it holds every year.

Information has also been sought about the sports activity within the State—like games in which the State Championships are held, games in which State Rural Meets are held, games which are included in the State Woman Sports Festival, National Championships conducted in the State and any international meet organised in the State.

The other information required by the N.I.S. for the compilation of the profiles includes the strength of the coaches in the State Sports Departments the number of games and the strength of the supervisory staff.

The number of stadia, indoor halls, swimming pools and the total Budget allocation, both non-Plan and Plan, also figure on the questionnaire.

The other item on the questionnaire is number of scholarships, both at school and college level, the incentives given to outstanding sportsmen in the shape of cash awards prizes and the particulars about any special drive launched for the development of trival and rural talent. Besides, the liaison officers will be required to write about the number of sports hostels and sports wings run in the schools and colleges of the State and the number of outstanding sportsmen produced in the previous year.

Paediatricians meet at Coimbatore

The two-day conference of the Indian Academy of Paediatrics was inaugurated at the Tamil Nadu Agricultural University by Mr A. Venkataraman, Vice-Chancellor. The conference was attended by several leading paediatricians from Tamil Nadu and Pondicherry. In his address, the Vice-Chancellor stressed the need for an effective integration programme on health care and nutrition especially for children with the active involvement of government departments and non-official organisations like panchayats and other institutions. He emphasised that child care and nutrition should be made compulsory subjects in educational institutions. He wanted better utilisation of adult education in making rural folk to learn more about nutrition. Malnutrition could be overcome by providing better job opportunities to all particularly the weaker sections of society.

Personal

1. **Dr. M. Aram has taken over as Vice-Chancellor of the Gandhigram Rural Institute.**
2. **Shri Satya Bhushan has been appointed Vice-Chancellor of Jammu University.**
3. **Dr. A. K. Dhan has been appointed Vice-Chancellor of Ranchi University.**
4. **Dr. Jayamant Mishra has taken over as the Vice-Chancellor of K.S. Darbhanga Sanskrit University.**
5. **Dr. Saligram Singh has been appointed Vice-Chancellor of L.N. Mithila University.**
6. **Dr. M.Q. Towheed has taken over as the Vice-Chancellor of Bhagalpur University.**
7. **Dr. Homi N. Sethna, Chairman, Atomic Energy Commission, has been appointed Chancellor of North-Eastern Hill University.**
8. **Mr. G. Parthasarathi, former Vice - Chancellor of Jawaharlal Nehru University, has been appointed as Chairman of the Indian Council of Social Science Research.**
9. **Dr. S.N. Kishore has taken over as the Pro-Vice-Chancellor of Bihar University.**
10. **Shri J. V. Bhargava has been appointed Dean of the College Development Council of the Jiwaji University.**
11. **Dr. S. K. Jain, Director, Botanical Survey of India, has been awarded the Pitambar Pant Environmental Fellowship for the year 1980.**

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Adhikari, Asimkumar. Society and world view of the Birhor: A nomadic hunting and gathering community of Orissa. University of Calcutta.

2. Chakraborti, Saurindramohan. Urban unrest in West Bengal: A sociological study of its recent patterns and dimensions. University of Calcutta.

Psychology

1. Kaliappan, K.V. Effect of anxiety on persuasion in anxiety neurotics and cancer patients. University of Madras.

Sociology

1. Kamalakara Rao, Pidakala. Professional crime in an Andhra town: A casual analysis. Andhra University.

Political Science

1. Bhasin, Vijay Kumar. Super power rivalry in the Indian Ocean. Meerut University.

2. Bhaskar, Manu. Role of press in the development of political consciousness. Jawaharlal Nehru University.

3. John, Pariyarathu John. Coalition Governments in Kerala, 1952-70. University of Kerala.

4. Sharma, Kavita. A comparative study of political thought and institutions of Manusmriti and Kautilya's Arthashastra. Meerut University.

5. Sultan, Neelam. Pattern of legislative leadership in Jammu and Kashmir : Role perception and role performance. University of Jammu.

Economics

1. Gupta, Vinod Kumar. An evaluative analysis of direct taxation of agricultural land in U.P. Meerut University.

2. Mohan Rao, C.K. Economics of primary education in Madhya Pradesh: A case study of Raipur District. Ravishankar University.

3. Nagarajan, K. Impact of land ceiling on agricultural production in Tamil Nadu since 1961. University of Madras.

Education

1. Senapati, Bangabhushan. A study of interest and ability of the Secondary School students in Science. University of Calcutta.

2. Thakore, Bharati. Construction of the diagnostic tests in fractions and decimals for the fifth standard pupils of Gujarati medium schools of Greater Bombay and development of remedial teaching materials and a study of its effectiveness. S.N.D.T. Women's University.

Commerce

1. Basu, Susanta Kumar. A conceptual and empirical investigation on conventional accounting and price changes. University of Calcutta.

2. Mital, Mithlesh. A study of state participation in Chemical Fertiliser Industry in India. Meerut University.

3. Ramakrishna Rao, Boda. Materials management in heavy engineering industry: A case study of Bharat Heavy Plate and Vessels Ltd. Andhra University.

4. Sanjeevi Rao, Mallipudi Srirama. Indian marine product exports: A study of the trends and prospects for product and market diversification. Andhra University.

Management

1. Sharma, Inderjit Kumar Malawaram. Careers of industrial managers in public sector undertakings in India. Nagpur University.

Home Science

1. Parvathi, P. Nutritional assessment of children and adolescent girls through anthropometric measurements. University of Madras.

2. Roshanara Begum, B. Biochemical—genetical studies on temperature—sensitive mutants of Aspergillus nidulans. University of Madras.

HUMANITIES

Philosophy

1. Balakrishnan, S. Some contemporary assessments of Kant's critique of Pure Reason. University of Madras.

2. Kanito Sema, V.C. Western humanism and Advaita Vedanta: A study of spiritual revolution with special reference to Teilhard de Chardin. University of Madras.

3. Nesy, D. Existentialistic trends in Nietzsche. University of Kerala.

4. Venkataraman, M. The Humanism of Home. University of Madras.

Religion

1. Spencer, Anand. The concept of World in Christianity and Sikhism. Punjabi University.

Linguistics

1. Tripathi, Bijay Krishna. English loan words in Oriya: A linguistic study. Ravishankar University.

Literature

English

1. Agarwal, Krishna Autar. Poetic achievement of Toru Dutt. Meerut University.

2. Bharadwaj, Satya Prakash. Human relationship in the novels of R.K. Narayan. Meerut University.

3. Garg, Arya Bhushan. Women in the plays of Bernard Shaw. Meerut University.

4. Rama Rao, Vadapalli Vijaya Bhaskara. Graham Greene's comic vision. Andhra University.

French

1. Sawkar, Suman B. Victor Hugo, creator of mythologies vis-a-vis, the Indian mythology. Karnatak University.

Sanskrit

1. Mishra, Ram Kishor. Sanskrit chhandon ka udhbhawa tatha vikas. Meerut University.

2. Visvanathan, S. Sivalilarnava of Sri Nilakantha Dikshita: A critical study. University of Madras.

Hindi

1. Badley Singh. Chhayavadottar Hindi mein janvadi chetana. Meerut University.

2. Bhaskara Rao, Sunkara Vijaya. Hindi kavita mein Eshwar kee parikalpana. Andhra University.

3. Gupta, Ganga Prasad. Mathilisharan Gupta ke kavya mein udatt tatwa. Meerut University.

4. Gupta, Kumud Rani. Dr Hazari Prasad Dwivedi ke nibandh sahitya ka shaili vaigyanik adhyayan. Meerut University.

5. Gupta, Sudha. Swatantaryottar kavita ka saundaryashastriya vivechan. University of Jammu.

6. Gupta, Usha. Saudarya shastra kee drishti se Dinkar ke kavya ka samikshatmak adhyayan. Meerut University.

7. Indumathi, K. A philosophical and aesthetic study of Dinkar's Urvashi. Sri Venkateswara University.

8. Jain, Manorma. Prasad ke kavya mein chitratmakta. Meerut University.

9. Manchanda, Phool. Hindi tatha Urdu kavya mein

rashtriya andolan kee abhivyakti : Ek tulanatmak adhyayan, 1901-36. Jawaharlal Nehru University.

10. Mishra, Bhawanath. Hindi sahitya kee pustakon ke sanrakshan mein Jain pustakalayon ka yogdan. Mithila University.

11. Mohamed Allauddin. A comparative study of the national sentiment depicted in the pre-independence Hindi and Telugu novels. Andhra University.

12. Pandey, Pramod Kumar. Swatantaryottar Hindi kahani aur swatantrya purva Hindi Kahani ka tulanatmak anusheelan. Bhopal Vishwavidyalaya.

13. Pangajam, L. A comparative study of the progressive poetry in Hindi and Malayalam. University of Madras.

14. Sajapurkar, Usha Gangadhar Rao. Child psychology in Surdas. *D.Litt.* Nagpur University.

15. Sharma, Gajendra Swarup. Ritikal ke paripreksbaya mein Sudan ka mulyankan. Meerut University.

16. Sharma, Jagannath. Udaseen sampraday ke Hindi kavi aur unka sahitya. *D.Litt.* Meerut University.

17. Singh, Nagina. Acharya Padam Singh Sharma: Vyaktitv evam krititv. Meerut University.

18. Vashishtha, Gargee. Shabd shakti siddhant ke adhar par Ghananand kavya ka vivechanatmak adhyayan. Meerut University.

Arabic

1. Anjuman, Sharifuddin. Elm-E-Hadith mein Hindustani ulma kee khidmat. Nagpur University.

Marathi

1. Chavan, Shivaji Ramchandra. Marathi Adhyatmik shayiri: Parampara va vangmaya. Shivaji University.

2. Kottapalle, Nagnath Lalujirao. Shankar Patil yanchya sahityacha chikitsak abhyas. Marathwada University.

3. Kulkarni, Prabhakar Vishwanath. Vishnushastri Chipalunkar: A study. Karnatak University.

Bengali

1. Jana, Samarendra Kumar. Adhunik yugadristite Sarat sahityer samasyahali. University of Calcutta.

2. Majumdar, Manas. Akshaya Kumar Baral: Kabi-o-kabya. University of Calcutta.

Oriya

1. Mishra, Satchidananda. Oriya Pouranik natak. Sambalpur University.

2. Mohapatra, Prafulla Chandra. A critical study of Sri Chandi Purana. Utkal University.

Malayalam

1. Purushothaman, E.K. Romanticism in the poem of Cannampula. University of Madras.

2. Ramachandrapanikkar, K.G. A study of selected place-names in Kottayam district: A historical, cultural and linguistic approach. University of Madras.

Tamil

1. Danya, K. Impact marxism on 20th century Tamil poetry. University of Madras.

2. Manian, T. Language of the Tamil dailies. University of Madras.

Telugu

1. Lakshmi, M.S. Prabhavati Pradyumna of Surana: A literary estimate. University of Madras.

2. Lakshmi Narayana, Gundavarapu. Adi Bhatta Narayana Dasu: Jiviatamusahityamu. Andhra University.

3. Neeraja, T. A critical study of Vikramarka Charitramu of Jakkana. University of Madras.

4. Seethalakshmi, V. Bhojarajiiya kavyanusilanamu. Nagarjuna University.

Fine Arts

1. Roy, Jharna. Bharatiya sangeete katha-o-sur. Rabindra Bharati University.

Geography

1. Jain, Ishwar Chand. Geonomic study of Baliakheri Block in Saharanpur district. Meerut University.

2. Jayamani, P. Spatial aspects of potential urban nodes and urban rural linkages in Ramanathapuram District, Tamil Nadu. University of Madras.

3. More, Kashirao Shivaji. Changing pattern of agricultural landuse in Kolhapur District, Maharashtra. Shivaji University.

4. Wodeyar, Ashok Kare. Impact of industries on Davangere and Harihar Region. Karnatak University.

History

1. Barui, Balaichandra. Salt industry of Bengal: The relations of production in the industry and trade in salt, 1757-1800. University of Calcutta.

2. Gupta, Radhe Sham. Socio-economic history of Haryana Region during 1803-1914. Meerut University.

3. Kakde, Vijay Trimbakrao. Female figure in the art of Ajanta, Ellora and Elephanta caves. Nagpur University.

4. Kapil Kumar. Peasants movement in Oudh, 1918-22. Meerut University.

5. McCoy, Dale Richard. Theosophical movement and national regeneration. University of Madras.

6. Mukhopadhyay, Gitasri. Impact of Gandhi on Bengal politics, 1921-41. University of Calcutta.

7. Sengupta, Sudhamayi. Buddhism in the classical age, A.D.400--A.D.750. University of Calcutta.

Classified Advertisements

AGRA UNIVERSITY

Senate House
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WANTED a Deputy Librarian for the University Library in the Grade of Rs. 800-50-1050-EB-50-1300-EB-50-1450 with usaal allowances. Qualifications: Master's degree in any subject together with M. Lib. Sc. (two years course) and five years experience as Assistant Librarian.

Applications on prescribed form must reach the undersigned by **name latest by August 18, 1980**. Forms can be had from Assistant Registrar (Publications), Agra University, Agra on payment of Rs. 5 either in cash at the University counter or through Money Order for Rs. 8/-.

S.B.B.B. Singh
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UJJAIN
No. Dev/80/Estt/Advt/1233
Dated: 5.7.1980
Addendum

The last date for the receipt of applications in the University Office for the teaching posts advertised vide this office **advertisement No. Dev/80/Estt/Advt/622 dated 11th June 1980** for the University Schools of Studies and Department of Library Science has been extended upto **6th September, 1980**.

—— **REGISTRAR**

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in AIU Library during July 1980

EDUCATIONAL PHILOSOPHY

Bolton, Neil. "Phenomenology and education". *British Journal of Educational Studies* 27(3); Oct 79: 245-58.

Furniss, W. Todd. "In spite of every sage : The value of a degree". *Educational Record* 61(2); Spring 80 : 36-42.

Garg, V.P. "Futuristic scenario of educational system : A viewpoint". *Journal of Indian Education* 5(4); Nov 79 : 56-60.

Reboul, Oliver. "Slogans and the educator". *Prospects* 9(3); 1979: 296-307.

EDUCATIONAL SOCIOLOGY

Ahmad, Karuna. "Equity and women's higher education". *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 33-49.

Nirmal Singh. "Perspective on higher education in India: The case of private control", *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 21.

EDUCATIONAL PLANNING

Davies, John L. "Political context of planning and policy making in the contemporary higher education institution". *Higher Education in Europe* 5(1); Jan-Mar 80; 28-32.

Jones, L.R. "Historical survey and the objectives of contemporary planning in higher education". *Higher Education in Furope* 5(1); Jan-Mar 80: 5-9.

Weathersby, George B. "Guiding principles for planning of higher education". *Higher Education in Europe* 5(1); Jan-Mar 80: 20-4.

EDUCATIONAL ADMINISTRATION

Dwarakinath, R. and Venkat Rao, B.V. "Teacher productivity and academic standards". *University News* 18(11); 1 June 80 : 298-301.

Filella, J. "Autonomous colleges—Chips of the old block ? Musings and misgivings on college autonomy". *New Frontiers in Education* 10(1); Jan-Mar 80 : 14-27.

Garret, C. Joanne and Larry N. "Policy analysis as an adjunct tool in the prevention of managerial crises in higher education. *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 13-19.

Goldberg, Mark. "Student involvement : A resource for administrators". *Educational Record* 61(2); Spring 80 : 15-17.

Jaleel, K.A. "Management of research". *University News* 18(7); 1 April 80 : 163-4, 167.

Puri, R.P. "Evaluation of performance Vs our universities". *University News* 18(11); 1 June 80: 296-7.

Reisz, R.P. and Venkitaraman, A.R. 'Implementation of college autonomy". *New Frontiers in Education* 10(1); Jan-Mar 80 : 28-39.

CURRICULUM

Sanoff, Alvin P. "Reaffirming intellectual standards". *Educational Record* 61(2); Spring 80 : 11-14.

Verma, Dhirendra. "New approach to curriculum design in technical education". *Journal of Indian Education* 5(4); Nov 79 : 28-34.

TEACHING

Indapurkar, C.D. "Philosophical analysis of methods of teaching at the higher education stage". *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 7-11.

Maria, Elias and Shirur, Rajani. "Syndicate studies : A teaching-learning technique in higher education". *University News* 18(8), 15 Apr 80 : 195-6.

Peter, K.C. "Teaching methods that ensure the learning situation." *New Frontiers in Education* 10(1); Jan-Mar 80: 44-9.

Rami Reddy, A. Venkata. "Students' reactions towards english and regional media : A comparative study". *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 101-8.

Sharma, K.K. "Microteaching at preservice level". *Journal of Indian Education* 5(3); Sept 79 : 24-8.

EDUCATIONAL RESEARCH

Paul, R.C. "University research and national development in India". *University News* 18(9); 1 May 80 : 228-42.

Psacharopoulos, George. "Questionnaire surveys in educational planning". *Comparative Education* 16(2); June 80 : 159-69.

EVALUATION

Ganesh, S.R. "Performance of management education institutions : An Indian sampler". *Higher Education* 9(3); May 80 : 239-53.

Gupta, M.P. "Critical study of evaluation under different systems of agricultural education". *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 89-96.

Hardwick, Lorna and others. "So what were we testing"? *Teaching at a Distance* (17); Spring 80 : 52-66.

ECONOMICS OF EDUCATION

Kamiac, Andrzej. "Economic aspects of the development and efficiency of higher education". *Higher Education in Europe* 5(1); Jan-Mar 80 : 56-7.

Mathias, T.A. "Financial aspect of college autonomy". *New Frontiers in Education* 10(1); Jan-Mar 80 : 40-3.

PROFESSIONAL EDUCATION

Ahmed, Aquiel. "Agricultural university as a multifunctional system". *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 57-73.

Jain, M.L. "Continuing engineering education". *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 51-6.

ADULT EDUCATION

Dube, S.C. "Significance of non-formal education". *University News* 18(9); 1 May 80 : 227, 242.

Holmberg, Borje. "Aspects of distance education". *Comparative Education* 16(2); June 80 : 107-19.

Moore, Michael. "Continuing education and the assessment of learner needs". *Teaching at a Distance* (17); Spring 80 : 26-29.

"NATIONAL ADULT education programme—an appraisal of the first year". *New Frontiers in Education* 10(1); Jan-Mar 80 : 50-74.

Rickwood, Pat. "Perceptions of the tutor-counsellor's role." *Teaching at a Distance* (17); Spring 80 : 80-4.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

Aderinto, Adeyemo. "New national policy on education and the growing youth unemployment in Nigeria". *Manpower Journal* 15(4); Jan-Mar 80 : 19-33.

Hallak, Jacques. "Higher education in France". *Journal of Higher Education* (Delhi) 5(1); Monsoon 79 : 1-6.

Kamat, A.R. "Critical issues in our educational policy". *Mainstream* 18(44); 28 June 80 : 15-21.

UNIVERSITY OF SAUGAR

Advertisement No. R/1/80

Applications on a prescribed form obtainable from the Office of the Registrar on requisition accompanied by a self-addressed stamped envelope and a Postal Order of Rs. 5/- as application fee, are invited for the following permanent (except where specified otherwise) posts so as to reach the Registrar, University of Saugar on or before **16th August 1980**.

2. Candidates already in service should send their applications through the proper channel. An advance copy, however, may be sent direct.

3. Candidates selected for interview will have to come to Saugar at their own expense and bring with them their original research papers, degree and certificates and mark-sheets of Higher Secondary/Intermediate/Pre-University Examinations, Bachelor's and Master's degree and other examinations for verification.

4. The period of probation shall be two years from the date of appointment. This period of probation may, however, be extended by such further period as the Executive Council may deem fit, but the total period of probation shall in no case exceed three years. Service during the temporary appointment, including the probationary period, may be terminated as per University rules.

5. The age of retirement is sixty years.

6. The University reserves the right to negotiate with suitable persons or persons, if necessary, who may not have applied.

7. Preference will be given to scheduled castes and scheduled tribes candidates if found suitable.

8. The University reserves the right to fill up or not to fill up the posts and/or to call selected candidates, for interview. The number of posts likely to be filled may vary.

9. The candidates must mention in each case the branch of their specialization and must show their qualifications from matriculation upwards indicating in each case the marks obtained, percentage of marks, division/grade and the subjects taken in each examination.

10. Scale of Pay

Professor—Rs. 1500-60-1800-100-2000-125/2-2500

Reader—Rs 1200-50-1300-60-1900.

Lecturer—Rs. 700-40-1100-50-1600.

Technical Asstt.—Rs 380-12-500-EB-15-560. (Subject to the approval of the State Govt.)

Instructor Pharmaceutical Science—Rs. 200-15-290 (likely to be revised)

With D.A. and P.F. benefits according to University rules.

Qualifications

1. Professor

An eminent scholar with published work of high standard, actively engaged in research, Ten years experience of teaching and/or research experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who had made significant contribution to knowledge.

2. **Readers**

Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in :

(i) Research , or
(ii) innovation in teaching methods, or
(iii) production of teaching materials.

About five years' experience of teaching and/or research, provided that atleast three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

3. **Lecturers**

(a) A Doctor's degree or research work of an equally high standard; and
(b) consistently good academic record with 1st or high 2nd class (B in seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programme, the degrees in (a) & (b) above may be in relevant Subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not avaialble or is not considered suitable, persons possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Explanation

1. For the purpose of determining high second class, the mid-point between the minimum percentage of marks fixed by a University for award of second division and first division may be taken.

2. For determining consistently good academic record, a candidate

Number of Posts in each Subjects

Subject	Professor	Reader	Lecturer	Others	Specialisation
English	—	—	2*	—	
Sanskrit	1	—	—	—	
Hindi	—	—	1+2*	—	
Urdu & Persian	—	1	—	—	Ability to translate manuscripts from Persian to Hindi/English.
Marathi	—	—	1	—	
Philosophy	—	1*	—	—	
Linguistics	1	1	—	—	
Library Science	—	1	—	—	
History	—	1	—	—	
A.I.H.Cul. & Arch.	1	—	—	—	
Pol. Science	1	—	1	—	
Economics	—	1	2	1	Technical Asstt.
Psychology	—	1	—	—	
Physics	—	1*	1*	—	
Chemistry	—	1	1*	—	Reader in Organic Chemsitry
Mathematics	—	1*	—	—	
Crim & For. Sc.	—	—	1+1*	—	
Anthropology	1	1	1*	—	
Geography	—	1*	—	—	
Botany	—	1	—	—	
Zoology	—	1	1+1*	—	
Commerce	—	1	—	—	Reader in Accountancy
Yogic Studies	—	—	1	—	
Pharmaceutical Sciences	—	3	—	3	Reader in Pharmacognosy/ Pharmaceutical Chemistry Temporary Instructors
Law	1	—	—	—	

* Appointment temporary against lien/leave vacancies termination of the lien the appointees will be entitled for entitled appointment according to rules.

should either have everage 55% of the two examinations prior of Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% marks in each of the two examinations separately.

Qualifications for Technical Assistant (Economics)

At least a Second class Master's degree in Economics/Statistics with experience of tabulating data on Power Samas machines.

Qualification for Instructors

(a) At least a Second class Master's degree of an Indian University or equivalent qualification of a foreign University in the subject concerned.

(Provided that in the case of Pharmaceutical Sciences, the minimum qualification shall be at least a Second class B. Pharm OR B.E. (Chemical Engineering) degree.

(b) Knowledge of Hindi will be desirable.

University College of Education

1. **One post of College Professor—(Permanent)**

Scale of Pay

Rs. 680-40-800-50-1000-EB-50-1150-with D.A. & P.F. according to University rules.

Qualification

At least a Second class Master's degree in Education with at least Six years experience of Teaching M.Ed. classes or ten years experience of teaching B.Ed. classes.

Desirable

Knowledge of Hindi

2. **One post of Instructor (Craft)**

Scale of Pay

Rs. 246-6-270-10-350-EB-12-1/2-400-20-460.

Qualifications

(a) At least a Second class Master's degree of an Indian University or equivalent qualifications of a foreign University in the subject concerned.

(b) Knowledge of Hindi will be desirable.

Central Instrumentation Lab. and Workshop

1. **Engineer**—One

Scale of Pay

Rs. 1100-50-1600—with the usual benefits of D.A., P.F. etc. as per rules.

2. **Technicians**—Two

(One in Glass Blowing and One in Optical shop)

Scale of Pay

Rs. 380-12-500-EB-15-560 with benefits of D.A., P.F. etc. as per rules.

Qualifications : Engineer

Essential

At least Second Class post-graduate degree in Engineering or Science with 5 years experience in R & D instruments OR in operation, repair and maintenance of modern instruments.

Technicians

Glass Blowing—10 years schooling and four years experience.

Optical Shop—10 years schooling and five years experience in the trade.

HARYANA AGRICULTURAL UNIVERSITY

Advertisement No. 4/80

APPLICATIONS invited for following posts. Higher start outstanding qualifications, experience and achievements. Benefit of Contributory Provident Fund and leave etc. according to University Rules. Applications of the candidates already in service must reach through proper channel upto the fixed date. Applications on prescribed form (obtainable free by sending self-addressed unstamped envelope size 23 x 10 cms. to Assistant Registrar(R), HAU, Hissar) accompanied by prescribed fee of Rs 10/- in the form of Crossed Postal Order in the name of Assistant Registrar(R), HAU, Hissar payable at HAU Hissar Post Office should reach Registrar by **19-8-1980**. The applicants must possess prescribed qualifications and experience on the last date of receipt of applications. The Envelope containing application must be superscribed as "APPLICATION FORM FOR THE POST OF————".

1. **Senior Breeder (Feed & Forage Sorghum)**—(One)

Essential

(i) Second class B.Sc. (Ag.)/B.Sc. (ii) Second class M.Sc. (Ag.)/M.Sc. in Plant Breeding/Genetics/Agr. Botany. (iii) Ph D. in Plant Breeding/Genetics/Agri. Botany. (iv) Ten years experience of research/teaching/extension in Forage Sorghum out of which atleast 5 years should be as Associate Professor or of equivalent rank.

Desirable

Experience of coordinating research programme.

2. **Chief Scientist (Department of Soils)**

Essential

(i) Second class B.Sc. (Ag.)/B.Sc./B.Sc. (Agri. Engg.). (ii) Second class M.Sc. in Soil Scence/Agronomy followed by Ph.D. in Soil Science/Agronomy OR M. Tech. in Soil Water Engg. (iii) Ten years experience in teaching/research/extension in Soil & Water Management out of which at least 5 years should be as Associate Professor or in equivalent rank.

Desirable

Ph.D. in Soil Water Engg.

3. **Cotton Breeder**—(One)

Essential

(i) Second class B.Sc. Ag./B.Sc. (ii) Second class M.Sc. Ag./M.Sc. in Plant Breeding/Genetics/Agri. Botany. (iii) Ph.D. in Plant Breeding/Genetics/Agril. Botany. (iv) Five years professional experience of research/teaching/extension in cotton breeding.

4. **Rice Breeder**—(One)

Essential

(i) Second class B.Sc. or B.Sc. (Ag.). (ii) Second class M.Sc. (Ag.) in Plant Breeding/Genetics/Agril Botany (iii) Ph.D. in Plant Breeding/Genetics/Agril. Botany. (iv) Five years experience of teaching/research/extension in Rice Crops.

Desirable

Experience in Biometrical genetics with special reference to design of field experiments.

5. **Associate Professor Foods & Dietetics**—(One)

Essential

(i) Second class B.Sc. (Home Science)/B.Sc. (Agri.)/B.Sc. (ii) Second class M.Sc. in Foods and Nutrition Dietetics/Institutional Management OR Diploma in Dietetics/Institutional Management. (iii) Ph.D. in Foods & Nutrition/Dietetics/Institutional Management. (iv) Five years experience of Teaching/Research in Foods & Nutrition/Dietetics/Institutional Management OR equivalent experience of working in a dietary department of a hospital.

6. **Insect Ecologist**—(One)

Essential

(i) Second class B.Sc. (Agri.). (ii) Second class M.Sc. (Agri.) in Entomology. (iii) Ph.D. in Entomology with specialization in insect ecology. (iv) Atleast five years experience of teaching/research/extension/in the field of Insect Ecology.

7. **Research Officer (Vety. Parasitology)**—(One)

Essential

(i) Second class B.V.Sc. & A.H. (ii) Second class M.V.Sc. in Parasitology (Entomology). (iii) Ph.D. in Parasitology with specialization in Entomology. (iv) Five years experience in research/teaching/extension in Parasitology (Entomology).

Desirable

Experience in Biology and control of ticks.

8. **Assistant Professor (Animal Nutrition)**—(One)

Essential

(i) Atleast second class B.Sc. (Ani. Sciences)/B.V.Sc. & A.H./B.Sc. (Dairying)/B.Sc. (Agri.). (ii) Atleast Second class M.Sc. in Animal Nutrition. (iii) Ph.D. in Animal Nutrition or three years experience in teaching/research/extension in Animal Nutrition.

9. **Assistant Research Scientist (Anatomy & Histology)**—(One)

Essential

(i) Atleast second class B.V.Sc. & A.H. (ii) Atleast second class Master's degree in Vety. Anatomy. (iii) Ph.D. in Vety. Anatomy or three years' experience in Research/Teaching in the field of Vety. Anatomy.

Desirable

Research experience in Micro Anatomy.

10. **Assistant Entomologist**—(One)

(i) At least second class B.Sc./B.Sc. (Agri.). (ii) At least Second class M.Sc. (Agr.) in Entomology. (iii) Ph.D. in Entomology with specialization in insect ecology or three years experienec in insect ecology.

11. **Assistant Insect Pathologist**—(One)

(i) Atleast second class B.Sc. (Agr.). (ii) Atleast second class M.Sc. (Agr.) Entomology. (iii) Ph.D. in Entomology with specialisation in Insect Pathology or three years experience of teaching/research/extension in the field of Insect Pathology.

12. **Assistant Poultry Technologist**—One

Essential

(i) At least second class B.V.Sc. & A.H./B.Sc./B.Sc. (Ani. Sci.)/B.Sc.

(Home Sci.)/ B.Sc. (Agri.). (ii) Atleast second class M.Sc. (Poultry Science)/M.Sc. (Food Tech.)/M.Sc. (Food Nutrition). (iii) Ph.D. in Poultry Tech./Poultry Sci./Food Tech. OR three years experience in teaching/research/extension pertaining to poultry Prod. Tech. or Poultry Science.

13. Assistant Statistician-cum-Programmer—(One)

Essential

(i) Atleast second division B.A. or B.Sc. (Math.) (ii) Atleast second Divn. of M.A./M.Sc. in Stats. or Math. followed by one year postgraduate training in Statistics. (iii) Ph.D. in Math/Stat. OR three years experience of Computer programming/Research/Teaching to undergraduate and Postgraduate classes. (v) Training in computer programming from a recognised Institution.

14. Assistant Scientist (Vety. Medicine) (One)

Essential

(i) Atleast second class B.V.Sc. & A.H. (ii) At least second class M.V.Sc. in Vety. Medicine/Protozoology/Bacteriology. (iii) Ph.D. in Vety. Medicine/Protozoology OR three years experience of Research/Teaching in the disciplines mentioned above.

Desirable

Working experience of modern serological tests as applied to haematozoan infections.

15. Assistant Professor of Surgery—(Three)

Essential

(i) At least second class B.V.Sc. and A.H. (i) At least second class Master's degree in Surgery. (iii) Ph.D. in Surgery or three years' experience of teaching/research/extension in Surgery.

16. Assistant Professor In Veterinary Anatomy—(One)

Essential

(i) At least second class B.V.Sc. & A.H. or equivalent. (ii) At least second class M.V.Sc. in Vety. Anatomy. (iii) Ph.D. in Vety. Anatomy OR three years experience in teaching/research in Vety. Anatomy.

17. Junior Reproductive Physio Pathologist—(One)

Essential

(i) At least second class B.V.Sc. & A.H./B.Sc. (Animal Science). (ii) At least second class M.Sc. in Animal Physiology/Physio-Pathology or in any related discipline. (iii) Ph.D. in Reproductive Physio-Pathology OR three years experience of Research/Teaching in Reproductive Physio-Pathology as evidenced by published work.

Desirable

Knowledge of French/German Russian. (ii) Knowledge of modern methods of investigation in Reproductive Physio-Pathology.

18. Assistant Economic Botanist (Clovers & Legumes)—(One)

Essential

(i) At least second class B.Sc. (Agri.). (ii) At least second class M.Sc. in Genetics/Plant Breeding. (iii) Ph.D. in Plant Breeding/Genetics OR three years' experience of teaching/research in Plant Breeding preferably on Clovers & Legume.

Desirable

(i) Ph.D. in Plant Breeding/Genetics. (ii) Training in Statistics with special reference to design of field experiments.

19. Assistant Research Officer (Bact. & Hygiene)—(One)

Essential

(i) At least second class B.V.Sc./B.V.A.Sc. (ii) At least second class Master's degree in Vety. Microbiology. (iii) Ph.D. in Vety. Bacteriology OR three years experience as Research/Extension/Teaching Associate or Lecturer or equivalent on bacteria of Vety. importance, preferably Mycoplasma.

Desirable

Training in Immunology and serology dealing with avain Mycoplasma.

20. Assistant Hospital Surgeon—(One)

Essential

(i) At least second class B.V.Sc. and A.H. or equivalent. (iii) At least second class M.V.Sc. in Surgery/Medicine/Gynaecology/Vety. Extension. (iii) Ph.D. in Surgery/Medicine/Gynaecology/Vety. Extension OR three years experience in Surgery/Medicine/Gynaecology/Vety. Extension.

21. Assistant Professor of Epidemiology—(One)

Essential

(i) At least second class B.V.Sc. & A.H. (ii) At least second class Master's degree in Epidemiology or Pathology/Preventive Medicine/Microbiology/Parasitology with specialization in Epidemiology. (iii) Ph.D. in Epidemiology or Pathology/Preventive Medicine/Microbiology (including bacteriology)/Parasitology with specialization in Epidemiology OR three years experience of teaching/research/extension in Epidemiology/investigation of animal diseases.

Desirable

Training in Biostatistics.

22. Assistant Research Officer (Physiology)—(One)

Essential

(i) At least second class B.Sc./B.V.Sc./B.Sc. (Ani. Sc.)/B.Sc. (Dairying)/B.Sc. (Agr.) with A.H. specialization. (ii) At least second class M.Sc. in Animal Physiology or in any other related discipline. (iii) Ph.D. in Animal Physiology OR three years research/teaching/extension experience in the field.

Desirable

Experience/training in modern methods in investigation in Reproduction Physiology.

23. Assistant Scientist (Entomology)—(One)

(i) At least second class B.Sc/B.Sc. (Agri.). (ii) At least second class M.Sc./M.Sc. (Agri.) in Entomology. (iii) Ph.D. in Entomology OR three years experience of Research/Teaching/Extension in Entomology.

24. Assistant Chemist—(One)

Essential

(i) At least second class B.Sc./B.Sc. (Agr.). (ii) Atleast second class M.Sc. in Organic Chemistry/Pharmaceutical Chemistry. (iii) Ph.D. in Organic or Pharmaceutical Chemistry OR three years research experience in synthetic chemistry/Chemistry of medicinal plants.

Desirable

Specialization in Medicinal Plants.

25. Assistant Epidemiologist—(One)

Essential

(i) At least second class B.V.A.Sc. & A.H. (ii) At least second class Master's degree in Animal Virology. (iii) Ph.D. in Animal Virology OR three years' experience of research/teaching in epidemiological aspects of viral diseases.

Desirable

(i) Ph.D. in Animal Virology.
(ii) Training in Epidemiology.

26. Junior Gynaecologist—(One)

Essential

(i) At least second class B.V.Sc. and A.H./B.V.Sc. (ii) At least second class Master's degree in Vety. Gynaecology and Obstetrics. (iii) Ph.D. in Vety. Gynaecology & Obstetrics OR three years experience as Research/Extension/Teaching Associate or Lecturer or equivalent in Vety. Gynaecology.

27. Assistant Research Scientist (Animal Nutrition)—(One)

Essential

(i) At least second class B.Sc. (Agr.)/B.V.Sc. & A.H./B.Sc. (Animal Science). (ii) At least second class M.Sc. in Animal Nutrition. (iii) Ph.D. in Animal Nutrition OR three years experience of research in Animal Nutrition preferably in Cattle Nutrition.

28. Assistant Economic Botanist (NSP)—(One)

Essential

(i) At least second class B.Sc./B.Sc. (Agri.). (ii) At least second class M.Sc. (Botany)/M.Sc. (Agri.) in plant Breeding. (iii) Ph.D. in Plant Breeding with specialization in Seed Production/Seed Technology OR three years experience of Teaching/Research in Plant Breeding with special reference to Seed Production/Seed Technology.

29. Assistant Geneticist (C-a-Genet-4 Scheme)—(One)

Essential

(i) At least second class B.Sc. (Hons.) Animal Sciences/B.Sc. (Agri.)/B.V.Sc./B.V.A.Sc./B.Sc. (ii) At least second class Master's degree in Genetics. (iii) Ph. D. in Genetics/Microbiology with specialization in Microbial Genetics OR three years experience of Research/Teaching in Genetics preferably in Microbial Genetics.

30. Assistant Research Officer (Vety. Parasitology)—(One)

Essential

(i)At least second class B.V.Sc. and A.H. (ii) At least second class M.V.Sc. in Parasitology with specialization in Entomology. (iii) Ph.D. in Parasitology OR three years experience in Research/Teaching/extension in Parasitology.

Desirable

Experience concerning Biology and control of ticks.

31. **Assistant Research Officer (Pica in Camels): (One)**

Essential

(i) Atleast second class B.V.Sc. & A.H./B.V.A.Sc. (ii) At least second class M.V.Sc. in Vety. Medicine/Pathology/Parasitology. (iii) Ph.D. in any of the above subjects OR three years teaching/research/extension experience in Vety. Medicine.

(**Note**: Qualifications relaxable in case of candidates with considerable experience in control of camel diseases).

32. **Assistant Scientist (Extension)—(One)**

Essential: (i) At least second class B.Sc. (Agri.). (ii) At least second class M.Sc. in Extension Education/Agril. Extension. (iii) Ph.D. in Extension Education/Agril. Extension or three years experience of teaching/research/extension in the subject.

Desirable

(i) Experience of extension work in rural areas. (ii) Rural background.

33. **Farm Manager (At Bawal)—(One)**

Essential

(i) Second class B.Sc./B.Sc. (Agri.). (ii) Second class M.Sc. (Ag.) with 3 years experience of independent management of a large Agril. Farm, OR second class B.Sc. (Ag.) with 5 years experience of independent management of a large Agril. Farm.

Note

1. One or more qualifications relaxable in case of candidates found otherwise outstanding (For posts at Sr. Nos. 1 to 32).
2. For posts at Sr. Nos. 8 to 32, requirement of experience is relaxable if persons with Ph.D. or having requisite experience are not available.
3. For posts at Sr Nos 8 to 32, persons who do not, possess Ph.D. at the time of their selection will, if selected, have to obtain Ph.D. degree within a period of 5 years failing which they will cease to earn increments till they complete Ph.D.
4. Special weightage will be given to extension experience possessed by the candidates, for posts in disciplines amenable to extension.
5. No. of posts mentioned against each post is likely to vary.
6. 20% and 5% vacancies of Assistant Professors and equivalent are reserved for Scheduled Castes and Backward Classes candidates respectively, if suitable candidates from these categories are available.

PAY SCALES:

Sr. No. of post	**Pay Scale**	**Total emoluments at the initial of the pay scale (exclusive of House Rent)**
1 & 2	—1500-60-1800-100-2000-125/2-2500	Rs. 1960/-
3 to 7	—1200-50-1300-60-1900	Rs. 1615/-
8 to 32	—700-40-1100-50-1600	Rs. 1041/-
33	—700-40-1100-50-1300	Rs. 1041/-

REGISTRAR

UNIVERSITY OF JAMMU

SITUATIONS VACANT

Applications on prescribed forms are invited for the following teaching posts so as to reach the undersigned on or before **20 August 1980**.

1. **Professor of Education**—(One post (Rs. 1500-2500).
2. **Readers**—(Rs. 1200-1900), One each in (1) Commerce (Accountancy), (2) Economics (Industrial and Agricultural Economics), (3) History (Medieval Indian History) (4) Political Science (Political Sociology or Research Methodology) (5) Physics Experimental High Energy Physics (6) Botany (Limnobiology), (7) Two posts in Laws (Constitutional Law/Administrative Law/Criminal Law/International Law/Mercantile Law).
3. **Senior Fellow in Dogri**—(Rs. 1100-1600).
4. **Lecturers**—(Rs. 700-1600) Two posts in Chemistry (Physical and Organic) and One each in (1) Commerce (Advanced Economic Theory/Managerial Economics) (2) Physics (Experimental High Energy Physics or Theoretical High Energy Physics preferably in particle phenomenology or experimental Solid State Physics).
5. **Research Associate in Physics**—(Rs. 1000/- to 1500/- Con) Scheme post upto **31 March, 1982**.

For full details and prescribed application form please apply by sending a self addressed envelope of 25 cm x 10 cms size bearing postage stamps worth Re. 1.50 paise alongwith a crossed postal order of Re. 1/- drawn in favour of the Registrar, University of Jammu, Canal Road, Jammu Tawi-180001, cashable at Jammu Post Office.

J.R. Rathore
REGISTRAR

SRI VENKATESWARA UNIVERSITY

Corrigendum to Advertisement No. EII-2/1980 (2) dated 15-5-1980

Serial No. 1 of the Advertisement No. EII-2/1980(2) dated **15-5-1980** be read as follows :

I. **Teaching**

"1. **State Bank of India Chair S.V.U.P.G. Extension Centre, Kavali/Kurnool**
Professor in 'Rural Banking and Development'
.. .. .. One post"

REGISTRAR

PUNJABI UNIVERSITY
PATIALA

Advertisement
No. 29/SPS/PRO/Estt/80

Applications are invited for the following posts:

1. **Professor in Journalism & Mass Communication—(One)**
(Rs. 1500-60-1800-100-2000-125/2-2500)

Qualifications

An eminent scholar with published work of high quality actively engaged in research. Ten years experience of teaching and/or research Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Note

Persons who have already applied in response to an earlier advertisement need not apply again.

Additional Qualifications/Specialisations

Degree or Diploma in Journalism/Mass Communication from a recognised institution or University. Professional experience of having worked in responsible and eminent positions in Journalism/Mas Communication/Public Relations.

2. **Reader in Business Management — (One)**
(Rs. 1200-50-1300-60-1900).

Qualifications

(a) Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) Innovation in teaching methods or (iii) Production of teaching materials.

(b) About 5 years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition relaxable in the case of candidates with outstanding research work.

Specializations

Production Management or Marketing Management or Personnel Management & Industrial Relations.

3. **Lecturer in Journalism & Mass Communication—(One)**
(Rs. 700-40-1100-50-1600)

Qualifications : Essential

(i) Consistently good academic record with a first or high second class Master's degree in the Subject (Communication/Mass Communication/Journalism etc.) from an Indian University or an equivalent qualification from a foreign University.

OR

A first of high second class Master's degree in Social Sciences/Sciences/Humanities with at least a second class Bachelor's degree or Diploma in Journalism from a recognised Indian University/Postgraduate diploma from a recognised National Institute.

Desirable

(i) Teaching experience at College or University level.

(ii) Work experience in any area of Mass Communication (Newspaper/Magazine, News Agency. Public Relations, Advertising, Radio T.V., Journalism etc).

Additional Qualifications/Specializations

Professional experience in Punjabi Journalism.

4. **Lecturers in Business Management—** (Two)
(Rs. 700-40-1100-50-1600).

Qualifications

A Master's degree in Business Administration or M. Tech. degree in Engineering with first class with the proviso that the incumbent would acquire a doctorate degree within a period of 5 years. In the case of allied subjects like Industrial Psychology, Personnel Management, Business Statistics, Cost Accountancy etc. where lecturers could be recruited with qualifications other than MBA and M. Tech., the minimum qualification would be the same as prescribed for the posts of Lecturers by the UGC for the Faculty of Arts and Social Sciences and Sciences.

Specialization

One in Financial Management and one in Personnel Management or Marketing Management.

5. **Planning and Development Officer—** (One)
(Rs. 1100-50-1600) In case the incumbent is drawn from amongst the academics he might be allowed the Reader's grade i.e. Rs. 1200-50-1300-60-1900, on a personal basis.)

Qualifications

A Second Class Master's degree or LL.B. degree from a recognised University in India or an equivalent qualifications from a foreign University with at least 10 years administrative/teaching experience in the capacity not below the rank of Assistant Registrar/Lecturer. Preference will be given to persons possessing experience/capability of planning different development schemes in Colleges/Universities and having upto-date knowledge of Indian Education scene and also familiarity with the working of current UGC schemes in the field of college/University education. Candidates should also have proficiency in Punjabi.

6. **Executive Engineer**
(Grade Rs. 800-50-1300/50-1600)

Qualifications

At least a degree in Civil Engineering from a recognised University or equivalent qualification like associate membership of Institution of Engineers. India etc., with at least 8 years experience as Sub-Divisional Officer/Assistant Engineer in a Govt./University/Semi-Govt. Deptt. Retired Executive Engineer/Superintending Engineer (M.E.S.) below the age of 63 years may also apply. Salary and other terms of service will be fixed taking into account the qualifications and experience of applicant.

Only those persons need apply who have handled the execution of works of big building projects, designed by Architects, involving R.C.C. Construction. Experience in design, construction and maintenance of Sanitary fittings in buildings is desirable.

Qualifications and experience are relaxable in case of the candidate, otherwise found suitable by the Selection Committee.

7. **Research Scholars**—Two in Astronomy and Space Sciences. (Tenable for two years in the first instance at Rs. 400/- p.m. all inclusive)

Qualifications

Candidates should possess at least second class Master's degree with at least one year teaching/research experience after obtaining Master's degree provided that the cordition of experience may be relaxed in the case of first class M.A.'s/M.Sc.'s provided further that a candidate with at least 55% marks both in B.A./B.Sc. and M.A./M.Sc. could also be considered in case no first class M.A./M.Sc. is available.

Specialization

Master's degree should be in the subject of:

(i) Astronomy and Space Physics/Astronomy.

OR

(ii) Physics with Space Physics/Electronics. Diploma in Space Sciences will be preferred.

8. **Superintendents**
(Rs. 825-25-850-30-1000-40-1200-50-1400-1580)

Qualifications

At least a Bachelor's degree from a recognised University with at least 10 years total service in an office of Government/University/affiliated college at least three years of which shall be in the capacity of Deputy Superintendent or on a higher post.

Persons who had applied in response to our earlier advertisement need not apply afresh.

9. **Deputy Superintendent**
(Non Superintendents Grade-II) (Rs. 800-25-850-30-1000/40-1200/50-1400) (25% posts are reserved for members of Scheduled Castes/Tribes)

Qualifications

At least a Bachelor's degree from a recognised University with either at least 10 years total service in an office of Government/ University/Affiliated college or at least three years experience of work in capacity of an Assistant or higher than that of an Assistant. Adequate knowledge of Punjabi is essential.

Persons who had applied in response to our earlier advertisement need not apply afresh.

10. **Technician 'A' (Electronics)**
(Rs 225-5-260-6-290/6-308)

Qualifications

Certificate course from I.T.I. in Electronics/Electrical Engineering.

11. **Technician 'B' (Mechanical)**
(Rs. 320-8-400-10-450)

Qualifications

Certificate Course from I.T.I. with five years experience.

12. **Technician 'C'**—(One each in Mechanical & Electrical)
(380-12-500/15-560)

For Mechanical

Certificate course from I.T.I. with 7 year's experience.

For Electrical

Certificate course from I.T.I. in Electronics/Electrical Engineering with 5 years experience.

13. **Junior Research Fellow—(U.G.C.)—** (Two)
Department of Astronomy and Space Science @ Rs. 400 p.m. all inclusive for first two years and Rs. 500/- all inclusive for subsequent two years.

Qualifications

Junior Fellowship is open to persons preferably below the age of 30 years, who have obtained a Master's degree of a recognised University in the first or high second division (with at least 50% marks or B in the seven point grade system).

Note

Master's degree should be in Astronomy and Space Sciences/Diploma in Space Sciences.

"Candidates for teaching & research posts should possess working knowledge of Punjabi upto Punjabi Praveshka Standard. Persons from outside Punjab could, however, be considered for appointment but they will be required to give an undertaking in writing that they will acquire the requisite qualifications in Punjabi within a period of two years".

General

Higher start with the grade admissible depending upon the ability and experience of the candidate. House rent and Dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications, complete in all respects on the prescribed form accompanied by a crossed Postal Order worth Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Caste/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala should reach the University by **23-8-80**. The forms can be had from the Production & Sales Officer, Publication Bureau, Punjabi University, Patiala on payment of Re 1/- by sending a crossed Indian Postal Order drawn in favour of the Registrar, Punjabi University, Patiala, alongwith a self addressed envelope of the size of 25 x 10 cms. stamped with 30 paise postage which should be superscribed at the TOP in BOLD letters "REQUEST FOR APPLICATION FORM FOR THE POST OF ."

Persons already in service should apply through proper channel, Government servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by **26-8-80**.

REGISTRAR

KONKAN KRISHI VIDYAPEETH

Dapoli, Dist : Ratnagiri

Advertisement No. Est/A-II/Advt./XVII/10000/ of 1980 dated the 2 July, 1980.

Applications in the prescribed form are invited on or before **25-8-1980** for the undermentioned posts. The application forms can be obtained from the Registrar, Konkan Krishi Vidyapeeth, Dapoli (Pin Code No. 415 712), Dist: Ratnagiri, Maharashtra State on sending a self-addressed envelope (4"x 9") with the postage of 60 paise and crossed Indian Postal Order of the value of Re. 1/- (Rupee one) payable to the Comptroller, Konkan Krish Vidyapeeth, Dapoli. The completed application forms accompanied by a crossed Indian Postal Order worth Rs. 2.50 payable to the Comptroller, Konkan Krishi Vidyapeeth, Dapoli should reach this office not later than **25-8-1980**. Applications received after the due date will not be considered. A separate application with separate fee is required for each post. Government servants and staff working under local bodies should necessarily apply through proper channel. However, an advance copy of the application may be sent by them to this office within the prescribed time limit.

(I) FACULTY OF AGRICULTURE

1. Professor of Plant Pathology : One post
2. Rice Specialist : One post
3. Asstt. Professor of Agril. Chemistry, and Soil Science (Bio-Chemistry). : One post
4. Asstt. Professor of Statistics : One post
5. Khar Land Scientist : One post
6. Asstt. Agronomist : One post (Reserved for S.C./S.T./D.T. & N.T.).
7. Junior Plant Pathologist : One post
8. Vegetable Breeder : One post (Reserved for S.C./S.T./D.T. & N.T.).
9. Field Officer : One post

INDIAN COUNCIL OF AGRICULTURAL RESEARCH SCHEME

(A) Co-ordinated Scheme for Research on Water Management

10. Chief Scientist : One post
11. Agricultural Engineer : One post
12. Junior Scientist (Agronomy) : One post
13. Junior Scientist (Soil Physics) : One post (Reserved for S.C./S.T./D.T. & N.T.).
14. Junior Scientist (Agril. Engineering) : One post
15. Junior Scientist (Statistics) : One post

(B) Operational Research Project on Integrated Control of Rice Stem Borer

16. Project Officer : One post
17. Agronomist : One post
18. Production Economist : One post
19. Plant Pathologist : One post

(C) Intensification of Research and Training on Pulse and Oilseed Crops

20. Scientist (S-2) Extension Education) : One post
21. Scientist (S-1) (Plant Protection) : One post

(II) FACULTY OF VETERINARY SCIENCE

22. Professor of Animal Nutrition : One post
23. Assistant Professor of Parasitology : One post
24. Assistant Professor of Dairy Science : One post
25. Assistant Professor of Pharmaecology : One post (Reserved for S.C./S.T./D.T. & N.T.).
26. Assistant Professor of Pathology : One post (Reserved for S.C./S.T./D.T. & N.T.)
27. Assistant Professor of Genetics : One post
28. Assistant Professor of Bacteriology : One post (Reserved for S.C./S.T./D.T. & N.T.).

PAY SCALES

(i) For the posts at Sr. No. 1,2, 10 and 22—Rs. 1500-60-1800-100-2000-125/2-2500.

(ii) For the posts at Sr. No. 5, 11, and 16—Rs. 1200-50-1300-60-1900.

(iii) For the post at Sr. No. 20—Rs. 1100-50-1300-60-1600.

(iv) For the posts at Sr. No. 3,4,6,7,8,12,13,14,15,17,18,19,23,24,25,26,27 and 28—Rs. 700-40-1100-50-1600.

(v) For the post at Sr. No. 21—Rs. 700-40-1300.

(vi) For the posts at Sr. No. 9—Rs. 600-30-750-EB-40-1150 (Likely to be revised).

Qualifications

(a) **For the posts at Sr No. 1,2,22**

Essential

After Ph.D. in the respective subject, seven years' experience in teaching or research as evidenced by published research papers or in extension education.

OR

After Master's degree in the respective subject, ten years' experience in teaching or research as evidenced by published research papers or in extension education.

Desirable

Experience in technical administration, ability to initiate and organise research.

Note: For the post at Sr No. 2 the respective subject is Plant Breeding.

(b) **For the post at Sr. No. 10**

Essential

After Ph.D. in the subject of Agronomy/Soil Science/Agril. Engineering seven years' research experience in the field of Water Management.

OR

After Master's degree in Agronomy/Soil Science/Agril Engineering ten years' research experience in the field of Water Management.

Desirable

(i) Ability to plan, guide and organise research on Water Management.

(ii) Experience of Research Management.

(c) **For the post at Sr. No. 11**

Essential

B.Sc. (Agril. Engineering) or M.Sc. (Agri.) in Agricultural Engineering in at least second class of any recognisep University with five years' experience in teaching or research as evidenced by published research papers or in extension education.

OR

M. Tech. in Agricultural Engineering of any recognised University with three years' experience in teaching, research or in extension education.

Preferable

Basic degree in Agriculture.

(d) **For the posts at Sr. No. 5,16 and 20:**

After Ph.D. in the respective subject, two years' experience in teaching or research as evidenced by published research papers or in extension education.

OR

After Master's degree in the respective subject, five years' experience in teaching or research as evidenced by published research papers or in extension education.

OR

Master's degree in the respective subject with ten years' total experience in teaching or research as evidenced by published research papers or in extension education.

Note

(1) For the post at Sr. No. 16, the respective subject is Agricultural Extension or Agricultural Entomology.

(2) For the post at Sr. No. 5, the respective subject is Soil Science.

(3) For the post at Sr No. 20, the

respective subject is Agricultural Extension.

(e) For the posts at Sr. No. 3,4,6, 7,8,9,12,13,15,17,18,19,21,23,24,25,26,27 and 28:

Ph.D. in the respective subject.

OR

After Master's degree in the respective subject, two years' experience in teaching or research as evidenced by published research papers or in extension education.

OR

Master's degree in the respective subject with a first class or equivalent C.G.P.A. either at Bachelor's degree or Master's degree level.

Note

(1) For the posts at Sr. No. 4 and 15, basic degree in Agriculture is preferable.

(2) For the posts at Sr. Nos. 9,13, 18 and 21, the respective subjects are Agricultural Economics, Soil Science, Agricultural Economics, and Plant Pathology/ Agricultural Entomology respectively.

(f) For the post at Sr. No. 14

Essential

B.Sc. (Agril. Engineering) or M.Sc. (Agri.) in Agricultural Engineering of any recognised University at least in second class.

Preferable

1. M. Tech. in Agricultural Engineering.
2. Basic degree in Agriculture.

Age

(1) Maximum age-limit as on 31-8-1980 will ordinarily be 40 years for the posts mentioned at Sr No. 1,2,5, 10,11,16,20,21,22 and 30 years for the remaining posts. Maximum age-limit is relaxable upto 5 years in deserving cases. The age-limit is not applicable to persons already in the service of this University.

(2) The pay scales of the above posts carry usual allowances admissible as per the rules of the University.

(3) Age relaxation for candidates belonging to S.C./S.T./D.T. & N.T. as per the State Government rules.

(4) If the response from highly qualified and more experienced candidates is adequate, those with less qualifications or experience may not be called for interview even though they fulfil the minimum qualifications laid down for the posts.

(5) The fact that the posts are advertised does not mean that all the posts will be filled in.

(6) The application to be recieved through proper channel must reach this office within 15 days from the last date of submission of application.

(7) The posts at Sr No. 10 to 21 are sanctioned by the Indian Council of Agricultural Research for a limited period.

Canvassing in any form will disqualify a candidate for employment under this university.

B.B. Rane
REGISTRAR

BANGALORE UNIVERSITY

'Jnana Bharathi' Bangalore-560056

No. EST/TP/ADVT 1/80 **Dated 2 July 1980.**

Notification

Applications in the prescribed forms are invited from the qualified candidates for appointment to the following posts in the Bangalore University.

Name of the Department	No. of posts	Reservation position
Dept. of Dance, Drama & Music		
Professor	1	SC
Reader (Music)	1	SC
Reader (Dance or Drama)	1	GM
Lecturers	7	BCM 1 GM 3 BCT 1 BSG 2
Dept. of Economics		
Reader (Econometrics)	1	ST
Reader	1	BT
Lecturers	6	SC 2 ST 1 GM 2 BCM 1
Dept. of English		
Reader	1	SC
Reader (Linguistics)	1	BCM
Lecturers	2	BSG 1 ST 1
Dept. of Geography		
Lecturers	2	BSG 1 BCM 1
Dept. of Hindi		
Reader	1	GM
Lecturer	1	SC
Dept. of History		
Professor	1	GM
Reader (Modern Social and Economic History)	1	GM
Centre of Kannada Studies		
Reader (Folklore Studies)	1	BCT
Lecturer in Sanskrit } Comparative Study Section	1	ST
Lecturer in Hindi	1	BSG
Lecturer in English	1	GM
Dept. of Political Science		
Reader (Public Administration)	1	GM
Dept. of Sanskrit		
Lecturers	2	GM 1 SC 1
Dept. of Sociology		
Reader	1	BCT
Lecturers	2	SC 1 BT 1
Dept. of Social Work		
Reader	1	SC
Dept. of Telugu		
Lecturer	1	BSG
Dept of Urdu		
Lecturer	1	GM
Dept. of Commerce		
Reader	1	SC
Lecturers	2	BCM 2
Dept. of Journalism		
Readers	2	BCM 1 ST 1
Reader (Rural Communication)	1	BSG
Reader (Communication Research)	1	GM
Reader (Communication Policy & Planning)	1	BCM
Reader (Journalism)	1	GM
Lecturers	2	GM 1 SC 1
Dept. of Education		
Professor	1	ST
* Reader (Research Methodology)	1	BSG

1	2	3
* **Additional essential qualification** A Ph.D. in Economics with published work in Education		
Reader (Educational Administration)	1	GM
Lecturer (Educational Sociology)	1	GM
Lecturer	1	BSG
Dept. of Architecture		
Professor	1	SC
Readers	3	SC 3
Lecturers	3	SC 3
Dept. of Civil Engineering		
Professor (Soil Mechanics & Foundation Engineering)	1	SC
Professor (Sanitary Engineering)	1	BCM
Reader (Sanitary Microbiology)	1	GM
Reader (Highway and Airport Engg)	1	BCM
Reader (Material Science & Construction Technology	1	GM
Reader	1	BCT
Lecturer (Sanitary Chemistry)	1	BCT
Lecturer (Highway Engg. & Pavement Design)	1	GM
Lecturer (Pre-stressed Concrete Structure)	1	BCM
Lecturer (Material Science and Construction Technology)	1	BSG
Lecturers	5	BCM 1 SC 2 GM 1 BCT 1
Lecturers (Temporary)	2	BCM 1 GM 1
Dept. of Electrical Engineering		
Professor	1	GM
* Professor (Electronic Circuits/Communications/Net work Theory with teaching and Laboratory development experience in Electronic Circuits)	1	GM
* **Additional Essential Qualification** Doctorate Degree, proven record of research, guidance, good publication record etc.		
Reader	1	BT
Lecturer (Net-work theory/Communication)	1	BSG
Lecturers (Electronic Circuits)	2	GM 1 SC 1
Lecturers	9	GM 3 BCM 2 BSG 1 BT 1 BCT 1 SC 1
Lecturers (Temporary)	3	BSG 1 GM 1 BCM 1
Dept. of Mechanical Engineering		
Professors	2	BCT 1 BSG 1
Reader	1	BSG
Lecturers	7	SC 3 BSG 1 GM 1 BCM 1 BCT 1
Lecturers (Temporary)	3	GM 2 SC 1
Dept. of Botany		
Lecturer	1	GM
Dept. of Chemistry		
Professor (Bio-Chemistry)	1	BT
Readers	2	SC 1 BCM 1
Reader (Physical Chemistry)	1	BCT
Lecturer	1	ST
Dept. of Geology		
Lecturers	5	BCM 2 BT 1 GM 2

(*Continued on page 432*)

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Advertisement No. 19/80

Applications are invited for six faculty positions in the Department of Metallurgical Engineering of the Institute in the following pay scales :

Assistant Professor—Rs. 1200-50-1300-60-1900.

Lecturer—Rs. 700-40-1100-50-1600.

The Department is seeking individuals with ability and aptitute for teaching in undergraduate/post-graduate programme, research and development in any of the following areas of specialisation:

1. Extractive metallurgy (with emphasis of process analysis; momentum, heat and mass transfer; chemical metallurgy).
2. Metals processing (specialisation in deformation processing, powder processing and foundary technology).
3. Physical metallurgy (specialisation in quantitative microscopy, thermodynamics and kinetics of phase transformations).

QUALIFICATIONS

Assistant Professor

Doctorate degree with good academic record and atleast three years of professional experience outside the work for the degree.

OR

M.Tech. with good academic record and atleast seven years of industrial experience outside the work for the degree.

The candidates must have demonstrated ability in teaching and independent research work as envisaged by adequate number of research publications of good quality in journals of repute or developmental work of merit in any one of the aforesaid areas of specialisations.

Lectruer

Doctorate degree with good academic record and adequate research experience resulting in research papers of good quality.

OR

M.Tech. with good academic record and atleast three years of teaching/research/industrial experience with good record outside the work done for the degree.

The candidates must have ability for good teaching and independent research as evidenced by adequate publications or developmental work in any one of the aforesaid areas of specialisation.

FOR BOTH THE POSITIONS BASIC DEGREE IN METALLURGY/METALLURGICAL ENGINEERING IS REQUIRED.

The Institute has well equipped laboratories and also Biosystems laboratory, Laser Laboratory, besides central facilities. There is well established Computer Centre having DEC 10, IBM 1800, PDP-1 Systems with interactive graphic terminals and TDC-316, and a group of experienced programmers. The Institute has a well stocked library with more than 2,17,000 volumes and 1800 periodicals. The Central facilities include 2 MeVan de Graaff accelerator, 4096 multichannel analyser and other radiation detection equipment, liquid nitrogen and spectrometers, glass blowing shop, central instrumentation laboratory, precision machine shop, besides a large workshop for fabrication of specialised research apparatus.

There is an Advanced Centre for Electronic Systems in the Institute attached to the Department of Electrical Engineering. The Centre carries out unclassified research and development work in the areas such as Communication, Radar, Signal and large processing and Instrumentation Systems, sponsored by governmental agencies and industry. Besides, an Advanced Centre for Materials Science has been established recently at the Institute by the Government of India to undertake research in the frontier of development on materials of national importance. This Centre houses sophisticated equipment such as X-ray diffractometers, transmission and scanning electron microsopes, MTS and Instron Testing machines, crystal growth facility etc.

The Campus facilities include a Primary and Higher Secondary School, a Health Centre, Swimming Pool and a Shopping Centre.

Posts are permanent and carry retirement benefits in the shape of CPF-Scheme or CPF-cum-Gratuity Scheme or GPF - cum - Pension - cum-Gratuity Schemes as may be opted according to rules. The age of retirement is 60 years. During the first year the appointment will be on probation. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid a second class railway fare from the place of duty to Kanpur and back by the shortest route.

In the category of Lecturer, one post will be reserved for SC/ST candidates. In the event of non-availability of suitable SC/ST candidates, the reserved posts would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped evelope of 25 cm x 10 cm size. Applications should be accompanied by a postal order for Rs 7.50 (Re 1.87 for Scheduled Castes/Tribes candidates).

Applicants from abroad may apply on plain paper enclosing a complete bio-data and names of three referees from whom reference letters may be obtained.

Applicants who are employed in Government, Semi-Government organisations or Institutes, should send their applications through proper channel else they will be required to produce a 'NO OBJECTION CERTIFICATE' from their employers at the time of interview.

Applications should reach the Registrar, Indian Institute, of Technology, I.I.T. Post Office, Kanpur-208016 (India) on or before **August 12, 1980.**

BANGALORE UNIVERSITY

(Continued from page 431)

1	2	3
Dept. of Library Science		
Readers	2	GM 1 SC 1
Lecturers	2	GM 1 BCT 1
Dept. of Mathematics		
Professors	2	SC 1 BCM 1
Dept. of Physics		
Lecturers	3	SC 2 GM 1
Dept. of Statistics		
Professor	1	BCM
Lecturer	1	BT
Dept. of Zoology		
Readers	2	GM 1 BSG 1
Lecturers	3	GM 1 BCM 1 BCT 1

Note :

SC	Scheduled Castes
ST	Scheduled Tribes
BCM	Backward Communities
BCT	Backward Castes
BT	Backward Tribes
BSG	Backward Special Group
GM	General Merit

Scale of Pay

Professors—Rs. 1500-60-1800-100-125/2-2500
Readers —Rs. 1200-50-1300-60-1900
Lecturers—Rs. 700-40-1100-50-1600

Qualifications for each post other than the posts comes under the Faculty of Engineering, is the same as recommended by University Grants Commission. In the case of Engineering Faculty, the qualifications is the same as recommended by the All India Council for Technical Education. Reservation for Scheduled Castes/Scheduled Tribes and other Backward Classes (Backward Communities/Backward Castes/Backward Tribes/Special Group) will be made as per order of the Government of Karnataka in the matter. Details are available in the information leaflet supplied with the application forms.

The last date for receipt of applications in the University is **18th August, 1980**. Application forms can be obtained from the office of the Registrar, Bangalore University, Jnana Bharathi, Bangalore-560056 or at City Office, Rajaji Block, Central College, Bangalore on payment of Rs. 25/- for the post of Professors/Readers and Rs. 20/- for the post of Lecturers. The amount may be paid in the office of the Finance Officer, Bangalore University, Bangalore or through crossed postal orders payable to the Registrar, Bangalore University, Bangalore. No other form of remittance will be accepted. The requisition for supply of application forms must be accompanied with a self-addressed envelope 6" x 12" duly stamped worth of Rs. 2.85 of postal stamps.

Candidates who have already applied for the posts of (1) Professors in the Dept. of Dance, Drama and Music/Architecture/Education/Mathematics (2) Readers in the Department of Journalism/Dance, Drama and Music/Lib. Science and (3) Lecturers in the Dept. of Journalism/Dance, Drama and Music/Library Science in response to earlier Notifications No. EST/CCB/MISC/42/75-76 dated 3-7-1975, EST/E3/ADVT/1/76 dated 30-6-1976 and EST/E3/ADVT/5/77 dated 30-4-1977 are required to apply again. Such of the candidates may obtain application forms on payment of difference amount of Rs. 10/- in the manner indicated above.

By Order
REGISTRAR

JADAVPUR UNIVERSITY
CALCUTTA-700032

Employment Notification

No. A2/C/ 8/80

Dated : July 9, 1980

The University invites application in the prescribed form for the following posts :

1. **Professor**—Electronics & Tele-Communication Engineering—One Post.

2. **Reader**—Electronics & Tele-Communication Engineering—Six Posts.

Qualifications for Professor Post Essential

(i) Research degree of Doctorate standard or published papers of an equally high standard.

(ii) Consistently good academic record with at least high second class Master's degree in Electronics and Telecommunication Engineering of Indian Universities or equivalent.

(iii) Ten years' teaching/industrial/research experience of which at least five years must be in teaching at post-graduate level.

(iv) Proven ability to guide research.

Qualifications for Readers Posts Essential

(i) At least high second class Master's degree in Electronics and Telecommunication Engineering with consistently good academic record of Indian universities or equivalent.

(ii) Five years' research/industrial/teaching experience of which at least three years must be in teaching at an Engineering degree College/University.

Explanatory note in respect of all kinds of posts

Candidates should either have an average of 55% of the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% in each of the two examinations separately.

Desirable for Professor Post

(i) Experience of organising laboratories.

(ii) Corporate membership in recognised professional bodies.

Desirable for Readers Posts

(i) Research degree or published papers of high standard.

(ii) Corporate membership in recognised professional bodies.

(iii) Ability to guide research.

Specialization for Professor Post

Control/Microwaves/Instrumentation/Communication/Computer (Software, Hardware)/Electron Device.

Specialization for Readers Posts

Control/Microwaves/Instrumentation/Communication/Computer (Software, Hardware)/Electron Devices.

Scales of Pay

Pforessor—Rs. 1500-60-1800-100-2000-125/2-2500/-

Reader—Rs. 1200-50-1300-60-1900/-

Person who is in the old scale might be considered eligible for appointment of higher post in the old scale.

Those who have applied earlier in response to the previous employment notification No. A2/C/2/79 need not apply again. However, they may supply additional information if they so desire.

Last date of receiving application is **9th August, 1980.**

Application forms are obtainable from the University office during working hours on payment of Rs. 2/- or by post on payment of Rs. 2/- + Re. 1/- as postal charge. No travelling allowance is admissible to candidates called for interview. Higher initial salary may be given to really deserving candidates. Those who are in employment should submit their applications through proper channel. Choice of the Appointment Committee will not necessarily be confined to applicants only. Canvassing in any form will disqualify a candidate.

REGISTRAR (Offg.)

JADAVPUR UNIVERSITY
CALCUTTA-700032

Employment Notification

No. A2/C/7/80

Dated : July 9, 1980

The University invites applications in the prescribed form for the following posts :

1. **Professor**—Production Engineering—One Post (Temporary)

2. **Reader**—Production Engineering—Two Posts (Temporary)

Qualifications for Professor Post Essential

(i) Research degree of Doctorate standard or published papers of an equally high standard.

(ii) Consistently good academic record with at least high second class Master's degree in Production Engineering/Industrial Engineering/Mechanical Engineering with Production Engineering subjects as specialisation of Indian Universities or equivalent.

(iii) Ten years' teaching/industrial/research experience of which at least five years must be in teaching at post-graduate level.

(iv) Proven ability to guide research.

Qualifications for Readers Posts Essential

(i) At least second class Master's degree with Production Engineering/Industrial Engineering/subjects as specialization in Mechanical/Electrical/Electronics and Telecommunication/Civil/Chemical Engineering with consistently good-academic record.

(ii) Five years research/industrial/teaching experience of which at least three years must be in teaching at an Engineering degree College/University.

Explanatory note in respect of all kinds of posts

Candidates should either have an average of 55% of the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% marks in each of the two examinations separately.

Desirable for Professor Post

(i) Experience of organising laboratories.

(ii) Corporate Membership in recognised professional bodies.

Desirable for Readers Posts

(i) Research degree or published papers of high standard.

(ii) Corp9rate membership in recognised professional bodies.

(iii) Ability to guide research.

Specialization for Professor Post

Production Technology/Industrial Engineering/Production Management/Manufacturing Systems Machine Tool Technology.

Specialization for Readers Posts

Production Management/Production Technology/O.R./Management Science/Machine Tools.

Scales of Pay

Professor—Rs. 1500-60-1800-100-2000-125/2-2500/-

Reader—Rs. 1200-50-1300-60-1900/-.

Person who is in the old scale might be considered eligible for appointment to higher post in the old scale.

Last date of receiving application is **9th August, 1980**.

Application forms are obtainable from the University office during working hours on payment of Rs. 2/- or by post of payment of Rs. 2/- + Re. 1/- as postal charge. No travelling allowance is admissible to candidates called for interview. Higher initial salary may be given to really deserving candidates. Those who are in employment should submit their applications through proper channel. Choice of the Appointment Committee will not necessarily be confined to applicants only. Canvassing in any form will disqualify a candidate.

REGISTRAR (Offg.)

MARATHWADA AGRICULTURAL UNIVERSITY
PARBHANI

No. APP—18 **Dated : 9-7-80**

Corrigendum to the Advertisement No. MAU/1/80

The post of "Assistant Professor of Food & Nutrition (Home Science)" appearing at Sr No. 7(ii) in the Advertisement No. MAU/1/80 should be treated as deleted and no candidate should apply for this post.

S.T. Kachwe
REGISTRAR

UNIVERSITY NEWS, AUGUST 1, 1980. **Regd. No. R.N. 7180/62 Postal Regd. No. D(C)-534**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

EXAMINATION CELL

71-6-619/A/3/2, Srinivasanagar East Colony, Hyderabad-500038.

ADMISSION FOR M. TECH. DEGREE COURSES AT COLLEGE OF ENGINEERING, ANANTAPUR AND KAKINADA DURING 1980-81.

Admission to the above courses for the Academic year 1980-81 will be made as per the Presidential Order in G.O.Ms. No. 453, Edn., Gen. Admn. (SPF-B) dt. 3-7-1974 and as amended in G.D.Ms. No. 1106 Edn. (C) Department, dated 10-12-1976.

Applications are invited from Indian Nationals for admission to the following M.Tech. courses in the University Constituent Colleges as shown below, so as to reach the Principals of respective Colleges by post or otherwise on or before 5.00 P.M. on **29 Aug. 1980**. Admissions will be made on the basis of marks obtained in B.E./B.Tech. examinations.

1.	M.Tech.	Civil Engineering Structural Engineering	at College of Engineering, Anantapur-515002.
2.	M.Tech.	Electrical Engineering Power Systems	
3.	M.Tech.	Mechanical Engineering Refrigeration and Airconditioning	
1.	M.Tech.	Civil Engineering Soil Mechanics and Foundation Engineering	at College of Engineering, Kakinada-533003.
2.	M.Tech.	Electrical Engineering Power Systems (with emphasis on High Voltage)	
3.	M.Tech.	Mechanical Engineering Mechine Design (with emphasis on Farm Machine Design)	
4.	M.Tech.	Electronics & Communication Engineering Instrumentation and Control systems	

Application form and prospectus can be had on requisition from the Principal, College of Engineering, Anantapur-515002 for the courses at Anantapur and from the Principal, College of Engineering, Kakinada-533003 for the courses at Kakinada, enclosing a Demand Draft for Rs. 5/ drawn in favour of the Registrar, Jawaharlal Nehru Technological University on any scheduled Bank payable at Hyderabad and also a self addressed and stamped (Rs. 2/-) envelope of size 10 cm x 22.5 cm. Remittance by Postal Orders, Money Orders, Cheques or Cash will not be accepted.

Applications received in person or by post after the due date and time will not be accepted.

Sale of Applications will commence from **1 August, 1980.**

Last date for sale of Application—**22 August, 1980.**

Last date for receipt of filled-in Application by Principal concerned—**29 August, 1980.**

REGISTRAR

OSMANIA UNIVERSITY

HYDERABAD-500007, A.P.

Advertisement No. 9/80
Dated : 10 July, 1980

Applications in the prescribed form together with the Registration Fee of Rs 5/- through M.O./I.P.O./Challan 'A' are invited for the following posts in the University Service, so as to reach the undersigned on or before **11th August, 1980**

1. Lecturer in History
2. Lecturers in Mathematics (Lien vacancies)
3. Lecturer in Urdu

Pay Scale

Rs. 700-40-1100-50-1600

Post No. 1 to 3

Qualifications

(i) Consistently good academic record with 1st or high 2nd class Master's Degree with 55% (B+) marks in a relevant subject or an equivalent degree of a foreign University.

(ii) A Doctor's Degree or research work of an equally high standard.

For Post No. 1

Preferential

(a) Specialisation in Modern Indian History.

(b) Diploma in Archives.

AGE

Not above (35) years.

(i) Age relaxation can be considered in deserving cases.

(ii) Age limit does not apply to the employees of this University, 14%, 4 % and 25 % reservations are made for SCs, STs, and BCs respectively.

Application forms can be had from the Director, University Press, Osmania University, Hyderabad-7 on payment of Rs 4.50 in person or by Money Order or by Indian Postal Order UNCROSSED. or by sending a self-addressed stamped envelope.

B. Ramachandra Reddy
REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advt. No. Aca. III/6/80

Applications are invited for the post of Associate Professor/Fellow in Hindi for the Centre of Post-Graduate Studies, Imphal.

Qualifications: Essential

(a) Consistently good academic record with at least a high 2nd class Master's degree in Hindi or an equivalent qualification from an Indian/Foreign University;

(b) A doctor's degree or published work of an equally high standard; and

(c) About five year's experience of teaching and/or research.

Desirable

Good background of comparative literature or good background of Linguistics.

Scale of Pay

Rs. 1200-50-1300-60-1900. Plus usual allowances.

Relaxation in any of the qualification may be made (a) in favour of persons of eminence or of high academic/professional distinction, and (b) in exceptional cases where adequately, qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

Normally appointment of Fellows is made on contract basis for a period ranging for one to three years.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route subject to the production of rail receipt.

Applications separate for each post, on the prescribed form, obtainable free of cost from the University by sending a self-addressed and stamped envelope of 23 cm x 10 cm size to the Deputy Registrar (Academic) Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, should reach him latest by **August 11, 1980**.

Candidates from abroad, applying for faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant information such as their names; date and place of birth; marital status; Father's name and address; academic and professional attainments; nationality; state of domicile; postal and permanent addresses; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidates professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

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(formerly known as Inter-University Board of India), Rouse Avenue, New Delhi - 110002

University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH AUGUST 15, 1980

1980

PM Meets Scientists

Prime Minister, Smt. Indira Gandhi, with Mr. N.D. Tiwari (left) and Prof. Nurul Hasan, at the conference of scientists and science administrators held recently in New Delhi.

ASSOCIATION OF INDIAN UNIVERSITIES PUBLICATIO

UNIVERSITY OF POONA

Applications in the prescribed form are invited for the following posts before Friday, the **12th September, 1980**.

1. **Professor of Defence Studies** (Swantantryaveer Savarkar Chair) —One post
2. **Professor of Mathematics**—One post (Temp. post)
3. **Lecturer in Mathematics**—One post (Temp. post)
4. **Lecturer in Statistics**—Three posts
5. **Lecturer in Philosophy**—One post.

General Qualifications

(1) **Professor**: Must be scholar of eminence, must have to his credit research work of independent merit, must possess fairly long experience of teaching of Post-Graduate classes and guiding advance research in the respective subjects.

(2) **Lecturer**: Must have a Doctor's Degree or published work of an equally high standard and consistently good academic record with First or High Second Class (B in the seven point scale). Master's Degree in a relevant subject or an equivalent Degree of a foreign University.

Minimum Qualifications

(1) **Professor**: As prescribed by the University for recognition as Post-Graduate Teacher (By Research)

(2) **Lecturer**: As prescribed by the University for recognition as Post-Graduate Teacher (By Papers)

1. **Professor of Defence Studies** (Swantantryaveer Savarkar Chair)—One post)

Qualifications: Essential

Must have held a rank in the Defence Forces not below that of Brigadier or its equivalent **and** must have undergone a course of training at a Staff College or its equivalent or must be a scholar of eminence in Defence Studies as evidenced by scholarly attainments and/or research publications of high merit or must be a post-graduate degree-holder with merit and must have teaching and research experience for 10 years or more at a University or research organisation in Defence/Strategic Studies.

2. **Professor of Pure Mathematics** (Temp. Post)—(One post)

Specializations

Algebra/Algebraic Geometry.

3. **Lecturer in Pure Mathematics** (Temp. Post)—(One post)
4. **Lecturers in Statistics**—(Three posts)

Qualifications: Essential

(1) M.A./M.Sc. in Statistics/Biometry with at least Second Class.

(2) Ph.D. or equivalent published Research Work.

Qualifications: Desirable

Specialization in one of the following branches:

1. Statistical Inference
2. Operation Research
3. Applied Probability
4. Demography
5. Design of Experiments
6. Statistical Genetics.

5. **Lecturer in Philosophy**—One Post.

Qualifications: Desirable

(1) A good grounding in Indian Philosophy and Contemporary Western Philosophy.

(2) Some post-graduate teaching experience in Indian Philosophy and/or Western Philosophy and/or Social Philosophy.

(3) Some research publication in any one or more of the above areas.

Scale of Pay

1. **Professor**—Rs. 1500-60-1800-100-2000-125/2-2500.
2. **Lecturer**—Rs. 700-40-1100-50-1600

plus allowances admissible under University rules.

Age Limit

Professors below the age of 50 years and Lecturers below 35 years.

The prescribed forms and detailed information available on request with (1) a self-addressed envelope (23 cm x 10 cm) bearing postal stamps worth Re. ONE and (2) Rs. TEN in cash or by a Postal Order drawn in the name of the Registrar, separately, for each post:

(a) Conditions relaxable/higher starting salary admissible in exceptionally capable candidates.

(b) In the case of Lecturers, other things being equal, preference will be given to candidates belonging to Scheduled Castes (including Scheduled Castes converts to Buddhism) and Scheduled Tribes.

S.P. Bhosale
REGISTRAR

MARATHWADA UNIVERSITY
AURANGABAD
Advertisement No. Estt./Dept./33
July 30, 1980

Applications are invited for the following teaching posts:

(1) **Professor**—One each in Chemistry and Political Science.

(2) **Reader**—One each in English, Sociology, Economics and two in Physics.

(3) **Lecturer**—One each in Russian, Chinese, Economics, Library Science, Zoology, Sociology and two in Journalism.
(All the posts of Lecturers are reserved for candidates belonging to Scheduled Castes and Scheduled Tribes).

Eight copies of applications together with eight copies each of the testimonials, if any, separately for each post giving particulars in the prescribed form (which will be supplied on receipt of an Indian Postal Order of Rs. 3/- towards the cost of the form) should be sent to the Registrar so as to reach him not later than **August 30, 1980**. The prescribed application forms will be supplied to the candidates on request accompanied by a self addressed envelope (23 x 10 cms) bearing postal stamps worth Rs. 2/- for the postage separately for each post.

B. H. Rajurkar
REGISTRAR

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
College of Fine Arts & Architecture
J.N.T.U., P.O., HYDERABAD-500488
NOTIFICATION

Admissions to 5-year Programme leading to Diploma in Applied Arts and 2-year Programme leading to Diploma in Photography

Applications are invited from candidates of Indian Origin belonging to Andhra Pradesh for admissions to the following programmes for the academic year 1980-81:

1. Diploma in Applied Arts (Painting/Commercial Art/Sculpture).
2. Diploma in Photography.

Admissions to the programmes will be made strictly as per the presidential order and subject to reservations in force. The following category of candidates **only** are eligible to apply:

1. Candidates who are "Local Candidates" of the three local areas in the State as defined in the Presidential Order.
2. Non-local candidates belonging to Andhra Pradesh who have studied within the State or outside the State.
3. Non-local candidates who are children/spouses of persons working in the State or Central Government or Public Sector Corporations or Undertakings, Local Bodies or Universities or other similar quasi-public Institutions within the State.

Minimum Qualifications for Eligibility

Candidates who have passed SSC or its equivalent examinations are eligible to apply.

Application Form and Prospectus: Application form and prospectus for these programmes can be had on request from the Principal, College of Fine Arts & Architecture, Masab Tank, JUTU, P.O., Hyderabad-500488, enclosing a Demand Draft on any scheduled bank for Rs. 10/- payable at Hyderabad to the Registrar, J.N.T.U., Hyderabad. Those who wish to obtain the Application form and Prospectus by post should enclose a self-addressed envelope of size 25 cm. x 12 cm. with postage stamps of Re. 1.35 affixed thereon. (10" x 5")

Sale of applications will commence from	1-8-1980
Last date for sale of applications	20-8-1980
Last date for receipt of filled-in application forms either by post or in person	29-8-1980

PRINCIPAL

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Opinions expressed in the articles and reviews are individual and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Role of Theory in Science

S.V. Murthy*

A theory is, broadly speaking, a working-thought model of a physical phenomenon. In scientific practice, the theory gives the maximum satisfaction to the scientist. The philosophical satisfaction that a theory brings is the reward for doing a good theory.

There are two ways in which a theory can develop in science. If an experiment precedes the theory, the process is known as inductive method of the growth of science. If a theory precedes experiments, the process is known as deductive method of the growth of science. In other words, science can grow from the particular to the general or from the general to the particular.

In some cases, there may be many possible theories for a physical phenomenon. Of these, the simplest is always chosen for, as it is said, Nature is pleased with simplicity.

We shall give below a few examples of both the processes of theory evolution in science—inductive and deductive.

My theory of the Hydrogen Bond is a good example of how a theory can evolve itself. A physical phenomenon is intriguing. It is known that the length of a H-bond is less than the sum of the ionic radii of the atoms on bond formation. This makes us ask the question why the length of the same species of H-bond, say, O-H-O varies in different compounds. It must be because the ionic radii of the atoms vary. Next the question to answer is how does the ionic radius vary? It is known that the coordination number of the ion, i.e., the number of nearest neighbours of the ion, increases the ionic radius. Thus the Coordination Number Theory of the Hydrogen Bond was built up. There is another aspect of the H-bond, viz, its symmetry. It is known that a larger ion attracts less. This completely explains the symmetry or the lack of it in a H-bond. It is found that this theory explains all the known aspects of the H-bond and it can also predict a few facts which must be certified by experiment.

Another example is the theory of Nuclear fission. In Nuclear fission, the mass defect is equal to the mass of a meson and so it can as well remain as a particle without getting converted into energy since there are no particles smaller than a meson. This impasse is solved by our Beson theory of matter. Based on the analogy between matter and man, we have extended the range of elementary particles after quarks to FEMTONS (10^{-15} cm.), ATTONS (10^{-18} cm.) and Besons (10^{-20} cm.). The Beson is the limit of matter. Smaller than the Beson, matter diffuses into energy. Thus the bombardment of the neutron on the nucleus batters the matter to smaller than Besons and thus there is release of energy.

Another example of theory preceding experiments is the new light on the Gravitational Theory. In an ion, the attraction depends not only on the charge on the ion, but also on the volume in which the charge is distributed, i.e., on the ionic density. Similarly, it was argued, can the gravitational attraction depend on the distribution of mass in a body, i.e. on the density of the body? Then the gravitational law becomes,

$$F = G.\ \frac{d_1 d_2}{r^2}\ .\ \text{Murthy—Newton Law.}$$

Justification of the theory can be sought in astronomy. Jupiter, the largest planet, is somewhere in between in the solar system. Because of its largest mass, it should have been nearest to the sun. But our

(*Continued on page 450*)

Indian Institute of Science, Bangalore.

Role of Universities in Extension and Community Service

D. Subba Rao*

The University occupies a pivotal position in the present context of a developing society with its vast resources of knowledge, expertise, professional skills and creation of proper attitudes towards community service and development. This is more so in a country where you have wide variations in the development of the individuals and communities living in different areas like rural communities, tribal communities, plain areas and urban areas. We require a deep understanding of the various problems of the different communities that exist in and around the University.

We have also got different professional groups like doctors, engineers, lawyers, architects, auditors, teachers, nurses, social workers and other professionals working on various levels. They require constant updating of their knowledge and improving their professional skills and change their attitudes towards fellowmen who are in the process of development. The common man also requires social, political and economic awareness of very high order to survive in the democratic society and to become partner in the process of decision making and sharing of knowledge. This is a very highly technical job which requires specialists in the field of continuing education who can cater to the various cross sections of society. In this connection there is a need for departments of continuing and non-formal education in the University set up which can in liaison with various professional groups and other individuals can start different courses and help the various individuals. This is a new phenomenon which requires a lot of extension work on the part of a few individuals who can take up this challenge in third world countries. This requires an attitudinal change on the part of the University community also.

On the model of the extension work undertaken by Oxford and Cambridge in the 19th century, Universities can do a lot of extension work and also promote liberal and general education for the various worker groups and employees on the model of Workers' Education Centres. Rajasthan University is the first University to start a department of adult education. Poona and SNDT Universities are also pioneers in the field of extension work as a number of dedicated teachers took up extension work in urban and rural areas. The other Universities like Andhra, Sri Venkateswara, Baroda, Aligarh, Madras, Delhi, Panjab, Calicut, Kashmir have taken up the programme in 70s. They are trying to create models which can be emulated by other universities and colleges. Thus Indian Universities have entered the phase of extension education and community service.

As the U.G.C. pamphlet on a policy frame on "Development of Higher Education in India" points out. "If the University system has to discharge adequately its responsibilities to the entire educational system and to the society as a whole, it must assume extension as the third important responsibility and give it the same status as research and teaching." All Universities and colleges should develop close relationships of mutual service and support with their local communities.

1. *Role of Andhra University*:—The Andhra University is one of the few Universities which has tried to take up the challenge of extension and community service. Its working, its history and tradition which are 50 years old have been in tune with the New Philosophy of Non-formal Education and its various forms—the Open University, University without walls, Extended University, Free University, Further Education, Continuing Education and so on.

The University has a long tradition of instruction through non-formal and evening courses in different branches of knowledge. The starting of these courses was the spontaneous outcome, a response to the needs of the community. Also, Visakhapatnam being an industrially developing area, a port city and being the Headquarters of Eastern Naval Command, the University has provided a number of applied courses in the field of Science, Engineering and Technology.

Because of the existence of number of public sector and private sector undertakings, part-time diploma courses in Hindi, Sanskrit, Telugu, Urdu, Russian, French and German and Courses in Electrical, Mechanical, Civil Engineering and Commerce are started in 50s and 60s. The University also picked up the challenge of providing continuing correspondence educational course not only to the people in and around Visakhapatnam but also for the seekers of knowledge and distant places. The School of Correspondence Education started in the year 1972 is providing instruction for P.U.C., B.A., B.Com., M.A. and M.Com.

2. *Continuing Education*:—The Department of Adult and Continuing Education came into existence in July, 1975 with the appointment of a Director to initiate, organise and coordinate various activities useful to the public. After its inception a variety of short term courses were started. In the first year courses in Programmed Learning, Educational Technology, Kitchen-gardens, First Aid, Food Preservation and Canning, Nutrition, Family Welfare,

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*Head, Deptt. of Adult & Continuing Education, Andhra University.

Health Education and Public Speaking were organised. The client for these courses included students, office workers, teachers, policemen and many from the general public. Non-formal education classes for the children of employees and of the surrounding community (6 to 14 years) were held and nearly two hundred students took advantage of this opportunity. Adult Education class for Class IV employees who were illiterate was started on 2nd October, 1975 and continued for 9 months and department gained a good experience. For those who stopped education at class V and VI level, non-formal education was organised. Twenty persons have completed Matriculation course.

A seminar on the problems of "Workers' Education" was held with the co-operation of the Workers' Education Centre, Visakhapatnam and the local industries and trade unions. In the light of recommendations made during the seminar, part-time and full-time courses in the Port Trust are being organised and the same may spread to other industries.

In the second year the Department of Adult and Continuing Education made a start in organising professional courses. A course in Industrial Relations was organised with the help of the Department of Industrial Relations. A course in Agricultural Meteorology was organised for Agricultural Extension Officers, Village Development Officials and progressive farmers and it was well received. In the last 5 years ending 1980 nearly 80 courses were completed and we are getting regular feedback in regard to general, professional and liberal arts courses.

3. *Adult and Non-Formal Education*:—The Department undertook a successful experiment of non-formal education for Koya youth with the help of social worker. The experiment was helpful in bringing better awareness, social change and create self-confidence in the youth. It also brought a change in their life style. Experiments which are integrated and multipurpose in character are of fundamental importance for rural development. This idea spread to other tribal areas and 3 districts in A.P. have taken up non-formal education programmes.

4. *Experiment in Central Jail*:—During October, '76 an experiment with illiterate prisoners in the Central Jail, Visakhapatnam was conducted with 30 illiterate prisoners. They were taught literacy and general education for six months. The prisoners attended regularly for one hour (10 to 11 a.m.) and took advantage and some took up vocational training and they were rehabilitated after their release.

5. *Farmers' Functional Literacy Programme in Bhimili*:—Farmers' Functional Literacy was started in February 1977 and was in operation for two years. All the 60 centres were fully developed. In some of the centres, there were some desirable and visible changes like formation of youth clubs, radio forums, and charcha mandals. Some adults bought a radio set and some subscribed to a newspaper. A Post Literacy Programme is going now.

6. *Vocational Courses*:—A Non-formal Vocational Education Course in masonry and brick-making of two months duration was held in '78 for the employees of the engineering department and casual labourers.

The department wants to start more such vocation-oriented courses for the youth in the age group 15 to 35 years so that we can solve the unemployment problem by teaching skills, including skills in marketing and banking, savings. There are some non-formal vocational courses which will be of great help to the youth to stand on their own legs. Courses in running tea shop, management of small hotels, scooter maintenance and repairs, pump-set repairs and maintenance, plumbing, carpentry, interior decoration, cabinet making, cooking, rural housing are some examples.

7. *Young Scientists Programme*:—The Young Scientists course was a unique course developed by the department of Adult and Continuing Education to provide Educational and Vocational Guidance to youngsters who have completed their secondary education and entering the portals of Higher Educacation.

8. *National Adult Education Programme* (*NAEP*):—The Department will provide the leadership and as part of this effort it has trained a large number of workers, supervisors and project officers. In addition to training, curriculum development including production of literature, evaluation and research will be the main responsibilities that are being under taken. The department will be guiding activities in the seven coastal districts from Srikakulam to Prakasam.

9. *Yoga Courses*:—The Department of Adult Education initiated a course on Yoga Asanas and Pranayama. A course of 3 months was devised for teaching of Asanas, Pranayama, diet control and relaxation. A person can join at any time and give a feedback on his practice and continue till he achieves significant results.

Nearly 500 persons from all walks of life including women in and around Vizag got benefit from the course. The course is quite popular. At the end of one year, series of lectures were arranged in January and February '78 and were well attended.

10. *Popular Lecture Series*:—To expose the layman to current topics in the fields of science, technology, arts and crafts, Indian culture and Yoga, series of popular lectures were arranged extending to 5 to 7 days continuously.

During February '78 a series of lectures known as 'Yoga Mala' to popularise and create interest in Yoga were organised. During summer of 1979, a series of popular lectures on cancer with the help of the A.P. Science Academy, Waltair Branch were held. During 1980 a series of popular lectures on child care, nutrition and children's education are planned to educate mothers, social workers, nurses and also provide consultancy on the above.

11. *Post-Literacy Programme*:—A Post Literacy Programme in ten villages in Anandapuram Zone of Bhimili Taluq was taken up by opening 15 adult education centres in that area, 2 centres exclusively for women, so that special programmes for women and children are developed. To develop broad reading interests related to their life, leisure and occupation, special training courses are being organised and Post Literacy readers are being developed in regard to child care, mother care, nutrition, prevention of communicable disease, health and sanitation. □

Internal Assessment and External Examinations

The question of continuous internal assessment of students in the context of examination reform crops up frequently. Not only at the level of universities and colleges but even in the school stage the issue claims urgent attention. Systematic efforts over the years by the University Grants Commission and the Association of Indian Universities have thrown up a variety of possibilities in higher education.

Generations of students have been tested and assessed through external examinations. This system could be said to have served the purpose of providing the then British rulers with matriculates and graduates to work in various branches of the government. After independence, the different Education Commissions highlighted the need for revamping the examination system, underlining in the process the importance of factors like reliability, validity and uniformity.

What are the defects inherent in the external end-of-the-year examinations ? Almost invariably, the papersetters belong to outside universities and do not have a feel of the standards prevailing in the examining institution. Students take things easy during the course and memorise the answers to set questions on the eve of the tests. A premium comes to be placed on rote learning, and with this as an asset, students manage to secure a first class fairly easily.

Again, the valuation process by external examiners gives rise to distortions; what one examiner evaluates as a good answer does not appear to be so to another. Variations of even upto 30 per cent in marking are found in test cases, especially in the humanities.

Malpractices like copying by candidates have lent weight to the minus side of external examinations. Chasing the answer scripts, locating and bribing the examiner (if he is so susceptible) assume the proportions of scandals in some universities. The honest straightforward examiners in this setting are looked upon as oddities.

The Kothari Commission made the suggestion in the Sixties that external examinations should be made reliable by enhancing the technical competence of paper-setters, improving the nature of questions, adopting scientific scoring procedures and employing machines to process the results. It also wanted internal assessment to be comprehensive enough to cover aspects of a student's growth that could not be measured by external examinations.

As the Status Report on 'Internal Assessment in Universities' published by the AIU points out: "An end-of-course examination will test achievement at one point of time within the limits of the test. Under continuous assessment there is knowledge not only of this achievement but also of progression towards it".

Though it became fashionable in the academic circles to talk about continuous internal assessment during the last few years, few teachers have been able to understand the spirit behind it. The very basis of the concept rests on the promise that the person who teaches a group of students knows them intimately enough to assess their academic progress. An array of tools like periodical quizzes, surprise tests and question-answer sessions enable the teacher to evaluate the student's mettle. The difficulty of divorcing continuous assessment from an estimate of the personality traits of students who do not come strictly under "cognitive skills" has also been recognised by experts in the field. In their view, initiative, leadership, teamwork and perseverence of the learner constitute some of these traits.

What are the various learning outcomes ? Comprehension, application analysis, synthesis and other skills like ability to handle instruments and to communicate with others are some of them. For measuring these, the teacher has at his disposal methods like guided individual and group projects, group discussion, objective tests, home assignments, laboratory or field work and seminars. The mentor who used a combination of these with a judicious frame of mind could be said to have evaluated fairly.

How has internal assessment fared in actual implementation ? The charge that this can be used to inflate the marks of the favourite students and downgrade those not on good terms with the teacher has not been without foundation. Similarly, managements of some colleges have compelled teachers to award uniformly high marks in order to boost their results and produce a better image of the institutions.

In the last two years, college teachers have expressed their fear about the dangers they are exposed to in the process of internal evaluation. Students flout with impunity the requirements for taking regular quizzes and other tests but approach teachers with demands for increase in marks. Instances of harassment and actual assault have been cited in university forums like the Senate and the Academic Council.

"Internal assessment should reflect the ability and willingness of students to work", says Prof. V. Devanathan, head of the Department of Nuclear Physics in Madras University. He points out that the system works well in places where the teachers are trusted. There are also academics who feel that the mechanism becomes not a reflection of the students' abilities but of their relationship with the teachers.

Dr. N. Venkatasubramanian, Principal, Vivekananda College, Madras, says: "We have had absolutely no problems because there is an inbuilt system to prevent any malpractice". There are avenues for redress of grievances at every stage—teacher who awards the marks, head of department, principal and the university.

(*Continued on page 442*)

Adult Education Programme
—A Misdirected Endeavour

S.C. Dube*

Launched with great fanfare in October 1978, the National Adult Education Programme (NAEP) seems to have run out of steam in less than two years. Its conceptual framework was assembled hastily, with shreds and patches taken from international thinking on the subject, and the strategy for its implementation was left to be devised by the bureaucracy. It is now apparent that its conceptual bases are inadequate and its operational technique ineffective. There is also reason to believe that the resources of the programme have been used by certain groups in the service of their political interests.

Adult education has been subject of an endless debate. Most of these endeavours turn out to be dreadfully boring. Such dialogues often reiterate untested and unproven assumptions, use the latest cliches, pose problems without making a determined effort to find solutions to them, and end up in platitudes.

All this prodigious industry notwithstanding, the pace of the adult education movement matches that of the proverbial snail. The NAEP could have emerged as a powerful instrument with a dynamic potential, but its effete leadership offers hope of its ever realizing the majestic heights that were envisioned for it by its sponsors in their first flush of misguided enthusiasm. So far we have not seen an effort to break out of the grooves of conventional thought and a will to address ourselves to the gut issues implicit in the programme.

No right-thinking Indian can be against adult education. On the contrary, many of us think that the programme was launched three decades too late. But there persist serious doubts and grave misgivings about its operational mechanics. It is time for us to rethink our strategy of action. With the experience of over twenty months behind us, we can now engage in some serious heart-searching. Is the NAEP to be a programme of national awakening? Or is it to end up as a programme of colossal national waste?

The NAEP is a welcome idea, but no one should seriously claim that it is in any sense original. On a relatively limited scale, several experiments of this kind were made in the pre-independence and post-independence periods. To the Janata Government one may give credit for making a massive financial outlay towards this programme and for giving it a national spread. But the earlier experiments were important; both their successes and their failures have many valuable lessons. Has there been any effort to analyze and evaluate these lessons?

Lapse

We have not gained from the wisdom of hindsight, nor has the experience of the past guided the modalities of action in the present. This lapse will exact a tremendous price.

The conceptual foundations of the NAEP are shaky. Consider, for example, the tendency to equate adult education with adult literacy. The difference between the two is often recognized in theory; but it is invariably blurred in practice. The NAEP emerges essentially as a programme of adult literacy; only lip service is paid to its awareness content and its functionality component. Classroom instruction does not meaningfully relate to the changing life contexts of the people. In operational terms, there is little scope for the realization of these laudable objectives.

We are still fumbling with our primers and basic readers. Not many of these books have been given careful field trials with a view to evaluating them scientifically. We have yet to hit upon the right mix of ideas, attitudes, and educational technology to suit the interests and needs of the differentiated target groups which the programme has to serve. Men's needs are different from those of women, rural needs are different from those of the urban population; what young adults need is different from what the more mature adults need. Where are the different primers and beginners' readers for them?

If we analyze the composition of an average adult education class we shall find them a mixed group, their members ranging from young school dropouts to mature adults. Some of their interests may be common, but not all. The software of educational technology will have to be different for different groups. What is worse, we appear to have given no thought to the all-important question: What after literacy? Have we contemplated any steps to produce imaginative literature for neo-literates to sustain their interest in reading? The answer to this question, in almost every part of India, is likely to be disheartening.

Feeble

The programme is aimed at the acquisition of literacy and not much more beyond. The citizenship education content is low, the effort to inculcate scientific attitudes is feeble. Working largely without scientific compilations of adult vocabulary and images, we do not even know what kind of language we should adopt in our basic readers. Linguistic purism often triumphs over the more effective "speech community" vocabulary and diction. We have not yet made up our minds about whether to accept a community's cultural frame of reference or to consciously set about changing it in certain key areas. We thus have a curious mix—on the one hand, it tends to perpetuate tradition with its manifest and latent superstitions and on the other, it creates an urge for progress.

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*Former Vice-Chancellor, University of Jammu.

Something is seriously wrong also with the instrumentalities of action. The making of detailed blue-prints as well as their implementation are left to a bureaucracy which is generally insensitive to subtle sociological and psychological nuances. Much of the programme is being implemented by part-time employees, almost all of whom are ill-trained and ill-equipped for the job. Let us seriously ask ourselves whether they are likely ever to emerge as the messengers of a new order? Does it not have all the mental blocks and inhibitions, superstitions and prejudices, obscurantism and orthodoxy that we seek to eradicate? Do we launch them into action with adequate technical skills? Are there any in-built mechanisms to sustain their morale? Can our mobilization mechanisms bring adult illiterates into our classes as learners, and knowledgeable, literate adults as instructors? Is there adequate community involvement? Are we providing enough technical support and guidance to our poorly equipped instructors? What do we encourage in them—innovation or compliance? Our ethos, unfortunately, is one of inspection, not of guidance. This has a corroding influence on the general vitality of the adult education programme.

Unrealistic

The idea of involving students and teachers from colleges and universities in the programme is attractive, but in many ways it is unrealistic. Experience demonstrates convincingly that student enthusiasm cannot be sustained beyond a point—certainly not for eight months or a year. The graph begins to register a slide within about two months and interest remains low unless something is done to revive it. Participation in the NAEP and in the academic learning process unfortunately remain two separate compartments, and there is little effort to create organic linkage between the two. Extension has so far not become an essential component of education, and the mis-match between the class and the field can have depressing consequences.

To be blunt, the NAEP has imposed the wrong priorities on our universities. Instead of being driven to undertake actual instruction in a large number of centres, the universities should be left free to respond creatively to many of the challenges which lie properly within the sphere of their activities and for which they have trained manpower and competence. Let the universities make careful case studies of earlier efforts at adult education and identify the factors of failure and of success. Let them also conduct problem-focussed surveys to inform and enrich the content and methodology of the programme. Let them have a big role in running courses for instructors and supervisors. Let them evaluate the on-going programme and look for constructive leads. And let them run experimental centres and alternative courses in established centres to pre-test various strategies. Let them use their knowledge in running brief *awareness* and *functional* courses that could supplement literacy programmes. Step by step, let us integrate extension into the general educational process. This should be a more meaningful role for university students and teachers. In the prevailing social ethos one should not expect them to carry the burden of managing a substantial chunk of the programme.

[*Courtesy* : **The Times of India**]

Internal Assessment and External Examinations

(*Continued from page 440*)

In a recent study, the Examination Reform Unit of Madras University has pointed out that "barring a few cases, the relationship between the marks of the internal assessment and the university examination is good." This study analysed the marks of the undergraduate semester courses (1976-77 batch which emerged from colleges in June 1979).

The accepted practice now-a-days is to show internal assessment marks separately in the mark sheets (side by side with marks secured at the external examinations). A glaring discrepancy between the two sets of marks has become the subject of much comment in some universities.

The Status Report of the AIU, in an analysis of 93 universities points out that seven of them do not have the system of internal assessment. There are universities where the only mode of assessment is internal and others where it is partly internal and partly external .

Academics are not against internal assessment as such. In fact, they would like to persevere with this if only facilities like secretarial aid are given. In their view, continuous monitoring of the academic progress of students makes many demands on their energies but the effort is worthwhile.

That only a very few universities have so far set up units for implementing examination reforms proposals is enough to prove the poor state of affairs in higher education. Educationists closely associated with work in this sphere feel that only a vigorous and sustained pursuit of the proposals will help tone up the standards of reliability of examinations. The dedication of thousands of teachers is no doubt a pre-requisite for this.

[*Courtesy* : **The Hindu**]

CAMPUS NEWS

Bihar VCs meet Chancellor and Chief Minister

Dr. A.R. Kidwai, Governor of Bihar and Dr. Jagannath Mishra, Chief Minister of the State, expressed their determination to restore normalcy in the universities of the State. The Governor said that the Vice-Chancellors would have his full support in their measures for restoring order in the universities. He said this could be possible as the government had accepted almost all the demands of the college and university teachers of the State.

Besides the Vice-Chancellors of eight universities, the Education Minister, Mr. Nasiruddin Hyder Khan, the Minister of State for Education, Mr. Hardeo Prasad, the Deputy Education Minister, Mr. Kumud Ranjan Jha, the Chairman of the Inter-University Board, Dr. S.P. Sinha, the Education Commissioner, Mr. K.A. Ardhanarishwaran, the Director of Higher Education, Mr. Damodar Thakur and members of the Inter-University Board, attended the meeting at Raj Bhavan. Dr. V. S. Jha, former Vice-Chancellor of Banaras Hindu University, Dr. M.V. Mathur, Director, National Institute of Educational Planning and Administration and Dr Sarup Singh, MP and former Vice-Chancellor of Delhi University, also attended the meeting as special invitees.

The Governor explained the various problems facing the Bihar Universities and requested the members of the University Enquiry Commission set up by him in April to study these problems in depth and suggest suitable remedial measures. He informed that steps had been taken to separate intermediate education from the university education and the Vice-Chancellors should now tone up the teaching and restore the normal functioning of the universities.

The Chief Minister requested the Vice-Chancellors to clear all the pending examinations including those of 1980 by the end of this year. He said the Vice-Chancellors should see that under no circumstances any examination of 1980 was postponed. In 1981, only examinations of that year should be held. Dr. Mishra assured to help them both administratively and financially in the smooth working of the universities. He asked them to make their suggestions for improvement in the universities Act. He said the government had sanctioned Rs. one crore for providing facilities in the old hostels of the universities and colleges. The universities should spend the amount before next March and utilise the money for improving their hostels. Separate funds would be allotted for the construction of new hostels and providing other students' amenities during the next financial year. The government has also doubled the number of scholarships for college and university students. He asked the Vice-Chancellors to take steps for immediate payment of the pending scholarships.

Selection Boards for Bihar Universities

According to newspaper reports, the Bihar Government is seriously contemplating to delink the appointment of college and university teachers from the Bihar Public Service Commission by setting up selection board in every university of the State. The problem of temporary teachers is also to be solved satisfactory. All those teachers who fulfil the UGC criteria would be permanently absorbed and dual system of appointment of lecturers would be scrapped by allowing the universities to have their own selection bodies.

It may be recalled that the University Service Commission was established in 1962 by the State Government to regulate the appointments made for affiliated colleges. With the conversion of 110 affiliated colleges into constituent units, only ten affiliated colleges fall under the jurisdiction of the Commission. The Bihar Public Service Commission was regulating the appointment of teachers in 130 constituent colleges besides appointments to government services. As it is overburdened with work, it would be rather difficult for it to regulate the appointments for 110 constituent colleges. The Kothari Commission has also criticised the appointment of teachers by the Bihar Public Service Commission. The Sen Committee of the University Grants Commission however had suggested that appointment of teachers should be made only by joint selection committees like the University Service Commission. It is expected that the selection board at university level will be impartial and external experts would be associated along with internal experts.

Madras affiliates ayurvedic college

The Syndicate of Madras University has decided to grant affiliation to the Ayurvedic College run by the Ayurveda Pharmacy Trust in Coimbatore for the BAMS degree. The institution has so far been awarding diploma on its own to the students who went through the courses there.

The Syndicate meeting held in Madras also discussed the proposal for the amendment of the university Act embodying changes in the composition and the powers of university bodies like the Syndicate, the Senate and Academic Council.

Patna to start library science courses

Patna University will start teaching of library science from the next academic session. The university authorities said that the proposal to start diploma course in library science had been submitted to the State Government quite some time back but the same could not be finalised due to paucity of funds. There has been a long time need for starting of such a course in the university for the benefit of persons working in different libraries.

New agricultural projects launched

The Indian Council of Agricultural Research has launched a national agricultural research project with World Bank assistance to increase the capabilities of agricultural universities to conduct specific research. A 27-million US dollar international Development Association credit is proposed to cover fifty per cent of the project costs. The Centre will provide 41 per cent and the State Government and agricultural universities the remaining 9 per cent and meet other costs like land acquisition. The project would concentrate on multi - disciplinary research oriented towards the needs of local agro-ecological zones.

Narendra Dev University acquires a new campus

The College of Agriculture of the Narendra Dev University of Agriculture and Technology has shifted to Kumarganj, the main campus of the university. Though the new campus is not yet fully developed but the faculty and the students have shifted so that the work can be expedited. The construction work was at standstill due to shortage of cement and inadequate supply of electricity. But these constraints have been removed now over hundred residences of different categories of staff are nearing completion. The students hostel having a capacity of 100 students and a teachers hostel having 24 seats would also be ready by the end of November for occupation.

GAU undertakes lab to land programme

To commemorate the Golden Jubilee (1929-79) Year of the Indian Council of Agricultural Research, several programmes have been undertaken. One of such programmes undertaken is the transfer of proven technologies in agriculture, animal husbandry and fisheries to the marginal, small and landless farmers. The programme has been styled "Lab to Land" to ruralise the terminology itself.

Shri I.J. Patel, Vice Chancellor, Gujarat Agricultural University, Dantiwada, gave Lab to Land Programme at Kalarani Centre for Hybrid-4 cotton in Adivasi block of ICMF Cotton Development and Research Association Cotton Development Project as Inter Institutional activities. One hundred farmers falling under the categories of small and marginal farmers were selected in four villages of Jetpur-Pavi Taluka of Baroda District. 0.20 hectare demonstration plot of Hybrid-4 cotton was arranged on the land of each farmer. The Project worked under the technical guidance of the Research Project Coordinator, ICMF Cotton Development and Research Association, Surat and the Research Scientist (Cotton), Gujarat Agricultural University. The supervisory staff and the plant protection equipments were provided by the ICMF Cotton Development Project. Besides giving technical guidance, as an incentive, each farmer was given financial help to the extent of Rs 400 per 0.20 hectare plot which was given in the form of critical inputs.

I. Area of operation

Four villages were selected. The details of population, total land irrigation facilities existing in each selected village are as under :

1. Kalarani

Population	2500	Total Land	320 hectares
Middle Class	100	Irrigated	60 hectares
Adivasi	2400	Dry Land	80 hectares
		Waste and Pasture	180 hectares
		Area under cotton	100 —do—
		Area under cotton covered under Lab to Land Prog.	28 —do

2. Haripura

Population	500	Total Land	192 hectares
Middle Class	—	Irrigated Land	20 —do—
Adivasi	500	Dry Land	172 —do—
		Area under cotton	25 —do—
		Area under Lab to Land Prog.	4.4 —do—

3. Deria

Population	580	Total Land	144 hectares
Middle Class	—	Irrigated	12 —do—
Adivasi	580	Dry Land	88 —do—
		Waste and Pasture	44 —do—
		Area under cotton	14 —do—
		Area under Lab to Land Programme	4.4 —do—

4. Gajara

Population	620	Total Land	142 hoctares
Middle Class	—	Irrigated	16 —do—
Adivasi	620	Dry land	126 —do—
		Area under cotton	16 —do—
		Area under Lab to Land Programme	3.2 —do—

II. Classification of farmers selected under Lab to Land Programme

Holding Group	Number of farmers				
	Kalarani	Haripura	Deria	Gajara	Total
0.2 to 2.0 ha.	44	6	4	6	60
2.1 to 4.0 ha.	26	5	7	2	40
Total	70	11	11	8	100

III. Critical inputs supplied to each farmer :

(a) First instalment in Kharif season : (per 0.20 Ha plot)

Fertilisers		**Pesticides**	
Diammonium Phosphate	20 kgs.	DDT 50%WP	500 grams
Marate of Potash	20 ,,	Thiadon 35 EC	500 ml.
Urea	10 ,,	Sevin 50% WP	500 grams
Ammonium Sulphate	50 ,,		

Cost of Fertilisers	Rs 123.30
Cost of Pesticides	Rs 79.00
Total	Rs 202.30

(b) Second instalment in Rabi season :

Fertilisers		**Pesticides**	
Urea	18.5 kgs	Hexasulphan 35 EC	800 ml
		DDT 50% WP	500 grams
		Phendal Dust	25 kgs

Cost of Fertilisers	Rs 27.75
Cost of Fertilisers	Rs 172.25
Total	Rs 200.00

The inputs supplied were only supplementary as the farmers used fertilisers and pesticides, etc. from their own resources which were, however, not adequate. The constant guidance, supervision and supply of most needy inputs at critical stages were much helpful to the farmers. As a result they obtained higher yield with better quality. Besides getting higher yields these Demonstration Plots had better educative value and the farmers were convinced about the advantage of adopting package of practices for Hybrid-4 cotton cultivation and got better returns.

IV. Results

The yields obtained by each farmer along wlth the yield of previous year and the villagewise performance are as under ;

Village	No of farmers	Yield in qts/ha range	Mean yield in qts/ha	Mean yield non project area q/ha	%age increase over non project
Kalarani	70	6.25 to 40	19.0	12.5	60.1
Haripura	11	7.50 to 15	12.00	6.25	92.0
Deria	11	7.50 to 20	12.75	7.0	80.3
Gajara	8	7.50 to 20	12.2	7.1	71.6

Most of the farmers had taken maize as an inter-crop and hence there is some effect on yield. The average yield of maize obtained was 9.3 quintals per hectare.

The yield results show that under Lab to Land Programme the farmers obtained higher yield as compared to those non-project farmers of the same villages. The increase in yield obtained by farmers of the same village from Lab to Land plots ranged from 60.1 to 92 per cent over non-project farmers.

(Continued on next page)

NSS programmes in Calicut to be broad based

Mr A.C. Shanmugha Das, Minister for Community Development and Sports while speaking at a function held in the campus of Calicut University to mark the complition of 10 years of NSS stressed the need for integrating the national service scheme in the curriculum. He requested the university authorities to take early steps for this integration so that it could serve as a model for other universities in the country. He complimented the university for being one of the first universities in India to start the national service programme. The Minister said that there would be various fields in which the NSS could cooperate with the Government in the implementation of development programmes in the tribal and coastal areas of Kerala.

Aligarh to organise Sir Syed hockey tournament

Aligarh Muslim University has decided to organise the All-India Sir Syed Memorial Gold Cup Hockey Tournament. The tournament will be held every year on the occasion of Sir Syed Day celebrations on October 17 which is observed as the Founder's Day. Teams from all the universities in the country will be invited to participate in the tournament.

Shillong centre of CIEFL organises course for teachers

The Regional Centre of the Central Institute of English and Foreign Languages located at Shillong has started a three-month refresher course for the teachers of Arunachal Pradesh, Meghalaya, Mizoram and Nagaland. About twenty-one teachers are participating in the course. The course will impart instruction on : Principles and skills of teaching English as a second language; Spoken English & Phonetics; Grammar, usage, writing and reference skills; reading and an orientation to linguistics.

The centre has so far conducted ten courses for college and university teachers and thirty-seven courses for school teachers.

Lab to land programme

(Continued from previous page)

One noteworthy incidence observed in the Programme was that seven farmers saved their crops by Pot irrigation. The yields obtained in Lab to Land plots by Pot Irrigation in comparison with normally grown plots by the same farmers are given below :

Village	No. of Farmers	Yield in quintals per hectare	
		Lab to Land Plot	Normal Plot
Gajara	4	8.75	3.75
Haripura	2	10.30	4.00
Deria	1	7.5	5.00

The inputs given to these farmers gave good incentives to them to work hard. They tried to save their crop from drought by Pot Irrigation from nearby flowing Nala and obtained quite high yield as compared to their normal fields.

V. Overall performances of the Project and benefit accrued to the farmers

Total Kapas yield obtained from Lab to Land Plots (40 hectares)	642.5 qts.
Mean per hectare—Lab to Land Plots	16.05 ,,
Mean per hectare—Non-project area	8.62 ,,
Percentage increase over Non-project area	83.8%
Value of the Produce—Lab to Land Plots	Rs 311250.00
Total Kapas yield obtained in the previous year from the same area under cotton (40 hectares)	385.50 qts.
Value of the above produce	Rs 192750.00
By giving financial help of Rs 40,000 for critical inputs and technical guidance at the door of the farmers, they obtained total additional income of	Rs 128500.00
Additional income per hectare	Rs 3212.00

There has been great impact of this Programme carried out in the most backward area where 90 per cent farmers are Adivasi. They used to grow Hybrid-4 cotton for the last 5-6 years but could not get the benefit of high yielding capacity of this variety for want of adequate financial resources and knowledge of proper agro-technique. Originally it was thought to adopt Telephone System—a new management technique. However, on account of limit of subsidy to the farmers, demonstration plots were arranged with normal recommended package of practices. Four adivasi farmers adopted Telephone System on their own accord. The yields obtained were as under :

Name of the farmer	Yield in qts/ha	His last year's yield qts/ha	Percentage increase
1. Nagji Vechla	37.5	12.5	200%
2. Kalu Manga	40.0	15.0	233%
3. Nana Vika	35.0	12.5	180%
4. Madhav Jamnadas	30.0	12.5	140%

By adopting Telephone System they obtained increased yield ranging from 140 to 233%. The project thus has fulfilled its objectives well.

Propaganda and publicity

The farmers from Maharashtra and Rajasthan who had come to see and study the large scale cultivation of about 16 hectares under Telephone System at Kalarani centre were also shown the Demonstration Plots taken under Lab to Land Programme. In all 262 farmers visited such Plots and they were highly impressed with nice crop raised by the Adivasi farmers. About 50 farmers from Baroda, Surat and Broach district also visited these plots.

Sadiq advocates creation of autonomous colleges

Mr Sadiq Ali, Governor of Maharashtra, made a strong plea for autonomous colleges in different universities of Maharashtra. While speaking at the joint board of Vice-Chancellors of six non-agricultural universities in Maharashtra, Mr Ali said that the establishment of autonomous colleges was one of the ways of encouraging academic excellence and innovations. He hoped that the State Government would take early policy decision regarding establishment of autonomous colleges so that they could start functioning effectively.

Dr Baliram Hiray, Minister for Education, expressed satisfaction that the three college tribunals set up for the universities were functioning smoothly. He urged all the universities to complete election to the students' council so that elected representatives of students could participate in the functioning of the universities. Among the other items discussed were: (i) the workload for college teachers; (ii) the new grant-in-aid formula for universities; (iii) introduction of new courses in engineering; and (iv) the question of uniform standard for admission to ayurvedic courses.

New courses at Cochin

On the recommendations of the Board of Studies in Mathematics and Statistics, the Academic Council of the Cochin University has decided to bifurcate the present MSc degree course in Mathematics and Statistics into separate degree courses in MSc Mathematics and MSc Statistics with an intake of 15 and 10 respectively.

The university has also recognised the MA degree examination (Hindi) of the Dakshina Bharat Hindi Prachar Sabha on a reciprocal basis. It also approved the scheme of examinations, regulations and syllabus for the BEd course.

Prime Minister meets scientists

Prime Minister, Smt Indira Gandhi, has urged the scientists of the country to bring forth advanced technology to enable the country to disengage itself from dependence on imported technology. She said that considerations like security, the time factor, performance guarantees and costs often compel us to buy advanced technology from the international market but it is imperative that we have to make every kind of necessary investment in ensuring self-reliance development. She was inaugurating a conference of top scientists and science administrators drawn from Science and Technology, Atomic Energy, Electronics and Space departments and national laboratories. The two-day conference was held in Delhi to evolve a plan framework for science and technology for 1980-85.

The Prime Minister observed that the time has come to determine priorities in apportioning the scarce resources. Atomic energy, electronics and space got their fair share of resources so far but we must now make urgent and all - round scientific efforts to promote solar and other forms of renewable energy to reduce our dependence on fossil fuels and safeguard our environment. She asked the scientific community to give a lead in these matters and also in exploiting the marine and sea-bed resources. She said true defence and true development cannot be bought or borrowed. We have to grow them ourselves. Alongside a few urgent and inescapable needs for which we have to import technology a programme should be worked out to assimilate it so that we obviate the need for repetitive imports at the earliest. In order to ensure this we should involve research and development experts to a greater degree in the work of project assessment and import decisions.

Pointing out that a sound science and technology plan was a crucial segment of the general Plan, Mrs Gandhi said that for a country of our size and endowments there could be no strategy other than self - reliance. While we all readily paid obeisance to this concept there were too many and too frequent lapses. Noting that the Indian technological capability "is still rather uneven" she said correct decisions had to be taken now so that the process of change was faster and surer in the immediate future. Many scientists felt they could do much better if there was a clearer definition of tasks and less bureaucratisation. She said that every scientist should make a determined effort to find answers rather than alibis.

Prof. Nurul Hasan, Vice-President of the Council of Scientific and Industrial Research, said that he held detailed discussions with over 400 scientists before the conference where the scientists felt that a major effort was needed to suitably reorganise the educational system and research. Mr Vijay Patil, Deputy Minister for Science and Mr N.D. Tiwari, Planning Minister also attended the inaugural session.

Outlining the main areas of discussion at the conference, Prof M. G. K. Menon, Secretary, Science and Technology Department, said that the conference emphasised the need for improving science education facilities to provide better human material for the science and technology plan. In this connection it was suggested that some 30 to 40 universities could be selected where science teaching could be upgraded and modernised and linked up with the national laboratories and through them the industries.

Prof. Menon said the new science and technology plan, which would be finalised after the National Development Council (NDC) agreed on the plan aims, priorities and resources for 1980-85 would reflect the basic transformation in scientific thinking that was taking place.

Prof. Menon said that areas of science like solar energy and ocean technology on which only marginal investment was made in the earlier plans would have a significant part in the new science and technology plan. The Science Secretary projected an investment of Rs 100 crores in it while Mr Patil said research would be undertaken in the use of metals in photovoltaic process and in energy storage.

Most of the earlier science strategies were based on western models of high energy content, Prof. Menon pointed out. The new strategy would reflect the need to economise on energy and explore new sources for it.

The discussions had also shown that the modern biological advances would provide a very important component of technological plan for the future. This would cover the frontier areas of immunology, genetic engineering, hybridisation, molecular biology and bio-mass out of which a whole new system of industrial, pharmaceutical and chemical needs of the economy would be sought to be met.

Chemical fertilizers could be increasingly supplemented by the use of nitrogen-fixing bacteria produced to specifications through bio-engineering, This would require an investment in research which was only a small portion of the interest charges on the present investment in chemical fertilisers.

The scientists also suggested strengthening of biology studies in the universities with the emphasis on advanced biology, and also advanced biology studies in IITs. An institutional structure that was thrown up at the conference was the constitution of a corporation to identify young groups of scientists working on frontier areas of biology and back them with funds.

The conference also considered better utilisation of coal. Among the new uses to which it could be put was as a feedstock for chemicals. It was suggested that at the end of the plan period the capacity to obtain four to five million tonnes of liquid hydrocarbons from coal could be built. New systems of transport of coal, methods of enriching low grade coal and the need for adequate coking coal or blends in the context of the large increase in steel production also came up for discussion.

The scientists had a discussion on promoting self-reliance and the use of indigenous technology versus imported technology in promoting it. It was pointed out that the culture of self-reliance was often weak in several economic ministries.

Indo-Soviet collaboration in the field of archaeology

A twenty-year Indo-Soviet joint project in comparative archaeology and ethno-linguistic studies, sponsored by the Indo-Soviet Joint Commission for Cooperation in Social Sciences has been accepted by the University Grants Commission. The proposal was put forward by Prof. G.R. Sharma, Head of the Department of Ancient History and Archaeology of the Allahabad University and was accepted by the Soviet side during his recent visit to Moscow. The proposal was signed by Prof. Sharma on behalf of India. The Co-Director of the project from the Soviet side would be Academician Bories A. Rayabakov, Director of the USSR Academy of Sciences while Prof. Sharma will be Co-Director from the Indian side. The aim of the project is collaboration between institution of higher education in India and the USSR in the field of comparative archaeology and ethno-linguistics. There will be exchange of academicians between the two countries every year for holding joint consultations.

Prem Chand centenary seminar held in London

Mr I.P. Singh, Acting Indian High Commissioner in U.K. presided over the centenary seminar on Munshi Prem Chand. The seminar was attended by the Secretary-General of the Hindi Prachar Parishad, Mr D. Gautam and other eminent hindi writers. Prem Chand's grandson Mr Alok Rai was also present.

Dr Ralph Russell of the London School of Oriental and African Studies said despite 200 years of Indo-British relations, it was ironic that British authors did not acquaint their people with great writers like Prem Chand or with the actual life of the Indian people. He said Prem Chand was a "man writing from the inside and could portray fearlessly, vividly and effectively some of the fundamental features of his country including the things which were wrong with it." Dr R.S. McGregor of Cambridge University called Prem Chand a hero of his times and said he brought something entirely new to the modern literature of India. Prem Chand who was chosen to be the first President of the Indian Progressive Writers Conference in 1936, knew what it meant to be a human being in his time and place.

The other speakers at the seminar compared Prem Chand to Charles Dickens, Leo Tolstoy and to Muni Vyasa, the author of Mahabharata.

Medical institute for Uttar Pradesh

The Government of Uttar Pradesh has appointed a committee under the chairmanship of Dr D.N. Sharma, a retired Director of Medical and Health Services, to work out the details for the establishment of a Postgraduate Institute of Medical Sciences at Lucknow. The other members of the committee are : Dr K.M. Neki, Director, Postgraduate Institute of Medical Education and Research, Chandigarh, Dr B. Ramalingaswami, Director-General, Indian Council of Medical Research, New Delhi, Dr M.L. Dhar, Chairman, Academic Body, All-India Institute of Medical Sciences, New Delhi and Secretaries of Finance, Planning and Health. The State's Director of Medical and Health Services, will be its convener-member.

The committee will inter-alia indicate the site for the proposed institute in Lucknow and assess the requirements of other building equipment, apparatus staff as also the expenses to be incurred on each item separately. The committee has been requested to report to the government by September so that necessary follow-up action can be taken at government level by the end of the year.

BHU to set up farm institute

The University Grants Commission has approved a proposal of Banaras Hindu University to set up an institute of agriculture.

The project has also been cleared by the Indian Council of Agricultural Research. The establishment of such an institute would involve certain changes in the university's statutes.

These changes will have to be approved by the President who is visitor of the university. The matter is being pursued by the Government actively.

UGC help for SC/ST students

Special measures are being taken by the University Grants Commission to help Scheduled Castes and Scheduled Tribes students of higher education.

The Commission has decided that assistance for general development will be available to colleges catering to the needs of Scheduled Castes and Scheduled Tribes under the five-lakh rupee scheme, although it has been suspended for other colleges.

Under the scheme, assistance upto five lakh rupees is given by the Commission on a sharing basis for the development of undergraduate education in arts, science and commerce courses in colleges. Certain conditions in regard to enrolment of students and the number of qualified permanent teachers have been laid down as the criterion for the sanction of this assistance. But these have been relaxed for colleges with students from Scheduled Castes and Scheduled Tribes on their rolls. They will be eligible for assistance under the scheme, if the number of such students is one-third of the total enrolment or 100 whichever is less.

The Commission has asked Vice-Chancellors for proposals from eligible colleges for the development assistance.

Dwindling wild life in Karnataka

The lion-tailed macaque, characteristics of the evergreen forests of South India, is threatened with extinction. This is because little remains of these forests, once extensive on the Western Ghats of Karnataka.

A study of the eco-system and the factors governing the distribution of wild mammals in Karnataka, brings out the damage caused to wild life by the fragmentation of their habitats.

The study, sponsored by the University Grants Commission, has been carried out by Dr Madhav Gadgil of the Indian Institute of Science, Bangalore, and his team of investigators. It is based on field observations, extending over a period of four years in various parts of the State.

The pattern of vegetation has been drastically changed by human activity over most of the states, according to the report. The mangrove forest has entirely disappeared from the coast and so has the semi-evergreen forest of the coastal plains, to be replaced by paddy and coconut cultivation. Dry deciduous, and scrub forests of the maiden area have also disappeared almost entirely, to be replaced largely by cereal crops.

The report cautions against any further fragmentation of the wild life habitats, particularly in the few viable areas such as Bandipur-Nagarhole complex, which are still left. It adds that small habitats, in the long run, cannot sustain their original biological diversity.

The study suggests that a reasonably large wild life sanctuary can be selected in the semi-arid belt of the Deccan plateau for building up genuine scrub vegetation so that its typical wild life can be restored.

Blackbuck, Chinkara, Nilgai, Wolves and Cheetahs once haunted the open scrub forests of Karnataka in large numbers. As a result of the decimation of these forests, the Cheetah has become totally extinct. The wolves are also a threatened species and the others survive only in pockets with special protection.

Of the 22 major wild mammals in Karnataka, elephants have suffered severely through loss and fragmentation of their habitat. Gaur are still widely distributed, particularly in deciduous forests, although much reduced in numbers due to poaching for their meat and hide.

The barking deer, a solitary species of the deciduous forest, which is much hunted for its meat, survives only in thin numbers.

Mango leaves to assess air pollution

Mango trees have been found to be extremely useful for assessing the total air and dust pollution in Bombay city. Ornamental plants like sunflower are equally good for this purpose.

These are some of the interesting findings of a research project sponsored by the University Grants Commission on "Effects of industrial air pollutants on plants." The research was conducted by Dr S.B. Chaphekar, Associate Professor in Ecology in the Institute of Sciences, Bombay. He was successful in preparing maps showing the distribution of air pollution in Bombay city, with the help of mango leaves and commelina, a common roadside weed.

Laboratory experiments carried out with controlled fumigation of plants by sulphur dioxide have also shown that 10-day old plants of 'Math' (*Amaranthus viridis*) are highly sensitive and have a very good potential to monitor the pollution caused by sulphur dioxide which is the most extensively emitted gas by industrial processes. Sulphur dioxide, which causes respiratory diseases, constitutes more than one-third of the nearly 1000 tons of pollutants that are thrown up into the atmosphere daily by industries in Greater Bombay region.

One of the other pollutants is Ammonia. Experiments by Dr Chaphekar have shown that 'Gaur' (*Cyamopsis tetragonoloba*) and hemp (*Crotalaria Juncea*) are suitable for detecting ammonia in air.

The index to the intensity of air pollution was provided by simple parameters like the number and area of damaged leaves.

Personal

1. **Prof. G. Ram Reddy, Vice-Chancellor, Osmania University has been, re-appointed for another term of three years w.e.f. 1st August, 1980.**
2. **Mrs I.K. Sandhu, former Vice-Chancellor of Punjabi University, has taken over as Chairman of the Staff Selection Commission, New Delhi.**
3. **Dr Sita Ram Jayasawal, has been appointed Dean, Faculty of Education of Lucknow University.**
4. **Prof. N. Venkateswara Rao, Department of Engineering Chemistry, Andhra University, has been invited to present a paper on 'Kinetic-Catalytic Determination of Osmium' at the 8th International Microchemical Symposium to be held at Graz, Austria during August, 1980.**
5. **Dr D.R.K. Sangameswara Rao, Head of the Department of Mathematics, Andhra University, attended the seminar on Complex Variables and its Application held at Trieste, Italy, during July, 1980.**
6. **Prof. Durganand Sinha, Head of the Department of Psychology, Allahabad University, has been awarded the Wundt Memorial Medal by the International Congress of Psychology at Leipzig (East Germany). He has also been elected to the executive of the International Union of Scientific Psychology.**
7. **Prof. G.N. Siddiqui has been appointed Registrar of Kashmir University.**

UGC panel proposes 5-year integrated course in philosophy

A committee of experts set up by the University Grants Commission for modernisation of philosophy courses in the universities has suggested that the syllabus should consist of at least two systems of Indian philosophy to be taught in their historico-philosophical context. The same approach will be useful in teaching the history of western philosophy. One of the suggestions made by the panel is the introduction of five-year integrated course on an experimental basis in subjects like Sanskrit and Philosophy. Another innovative suggestion is the introduction of open course in which the teacher at the postgraduate level has the freedom to devise the course, subject to the approval of the Department or the Board of Studies. The panel feels that for research in Indian philosophy a student must know the language of the relevant texts. The group is of the view that students of philosophy suffer from a handicap in recruitment to various jobs in banks and other public bodies. It has recommended that immediate steps be taken to remove such difficulties. The committee's report is based on four workshops in philosophy which were organised at Andhra University, Poona University, Utkal University and Rajasthan University.

The report stresses that modernisation of syllabi should not be confused with westernization. What is required is to make the courses culturally rooted and socially relevant. Social relevance is not merely a matter of concern for political and social problems. It also includes a concern for the intellectual problems of the community. For revitalising philosophy, Rajasthan University has already introduced a scheme for an active dialogue between the traditional types of pandits and the philosophy teachers trained in modern methods of teaching. The scheme provides for reciprocal visits for teachers of Sanskrit College in Jaipur and those of the Department of Philosophy for academic exchanges on philosophical problems of common interest.

UGC team visits Patna

A three-member UGC team headed by Dr. Shankar Narayan, Additional Secretary of the UGC visited Patna University and discussed the financial position of the university vis-a-vis the opening of new centres of advanced study. The university was assured that the development work would not suffer on account of paucity of funds. The Commission was always ready to provide the necessary grants for development projects.

The university proposes to establish advanced centre in Botany and Geography.

Dr. R. Shukla, Vice-Chancellor of the University informed that steps have been taken by the Government of Bihar to resolve the financial crisis of the university and the university had received the necessary funds immediately required by it from the State Government. The university budget for 1980-81 was also discussed and the approval of the Government was expected shortly. He also informed that there is a move to enhance the statutory grants of the varsity by the government.

Role of Theory in Science

(*Continued from page 437*)

theory says that its density makes it lie where it is now. There are rings round Saturn and Uranus because of their low density since they are away from the sun. The sizes of the rings also depend upon the densities of the planets, the less dense planet (i.e., the farther planet) having the larger rings. There is another important aspect in the solar system, viz, the advance of the perihelion of mercury, by a very small amount of the order of about 55 seconds of arc in a century. This is explained by our theory as being due to the fact that the density of the sun is increasing over centuries. This means the sun is shrinking in size over centuries. This prediction has been corroborated by the accumulated astronomical data on the sun. It is actually found that the sun's diameter has shrunk by 700 kilometers over the last 265 years.

We shall now give an example of an inductive type of theory evolution. An experiment is done, a curve is drawn and it is found that there is a method in the variation of the curve. This makes us try to evolve a theory for the behaviour. For this, there are many examples in Physics. In Physics experiments, there is a kink in the curve at any transition point—from para to ferroelectric state, from para to ferromagnetic state etc. The physical quantity being measured depends on the crystalline symmetry phase of the substance and this leads us to say that there is phase transformation at every transition point and this indeed is found to be the case.

Finally, the theory belongs to pure science as contrasted with applied science. The debate whether pure science is imporant or applied science is important is interesting. Though the appeal of applied science and technology is isntantaneous and very tangible, it is pure science that is at the root of all these developments. Practice of pure science requires more fundamental knowledge than tinkering with applied science. Applied science gives transient material satisfaction while pure science gives lasting philosophical satisfaction. To do away with pure science in favour of applied science is like ploughing Shalimar Gardens or Lal Bagh to grow potatoes. □

Marine sciences to be developed

The Department of Science and Technology has drawn up a plan of action to create the infrastructure needed for intensifying basic and applied work in oceanographic sciences and to develop marine science capability. The plan of action has been approved by the Ocean Science and Technology Agency for acquisition of major research facilities in the country.

The Standing Committee of OSTA has identified seven important areas for the national programme and expert panels for each of these are working out the details and priorities for research and survey of marine resources. The Department is working out a strategy for taking science and technology to rural areas and ensure integrated rural development. This is being done with the assistance of inter-disciplinary group of ICAR, CSIR and ICMR.

The other important steps that are being taken by the department include: an expert panel in DST working on the identification and formulation of specific projects in both basic and applied aspects of tissue culture; preparation of a status paper to outline further development in the field; creation of infrastructural facilities; establishment of a national centre of immunology; setting up of a task force on primate research to prepare definite programme; setting up of animal house facilities as well as guidelines for ethical use of primates in bio-medical research.

Planning for the future at the Marathwada University

The Academic Planning and Evaluation Committee of the Marathwada University had initiated moves to schedule a series of three major seminars to consider and plan for the next ten years so as to give new directions to the academic endeavours in the region. In order to prepare proper grounds for such a scheme a comprehensive survey of all the affiliated colleges in Marathwada was conducted by the University in collaboration with the Indian Institute of Education, Pune.

The first seminar relating to the 'Marathwada University and its association with Primary and Secondary Education' was held on November 10, 11 and 12, 1979 and it was inaugurated by Prof. J.P. Naik of Indian Institute of Education, Pune. A second seminar was held on January 19 and 20, 1980 and the theme was 'Marathwada University and the Regional Development'. The Seminar was inaugurated by Dr V.M. Dandekar, Director, Gokhale Institute of Politics and Economics, Pune and was presided over by Sri B.A. Kulkarni, I.A.S. (Retired), Former Secretary to the Government of Maharashtra. The third seminar was held on February 16, 17 and 18, 1980 and it related to the 'Problems of Higher Education in Marathwada' and it was inaugurated by Prof. Sadanand Varde, Former Minister for Education, Government of Maharashtra.

The manifold themes such as (1) Drop-out levels at the primary and secondary schools; (2) Problems related to the education of girls; (3) In-service training for school teachers etc. were discussed threadbare and sharply focussed recommendations are being made for the consideration of the university authorities as well as the Government of Maharashtra so as to enable them to view things in its proper perspectives. The findings of the survey which attracted a good deal of attention of the press in the State would, it is felt, be useful in planning for the next 10 years in a situation where there has been a precipitous fall in the number of students seeking admissions to collegiate courses as a consequence of the introduction of the 10+2+3 system of education.

Energy workshop held at Jabalpur

Dr Sukhdev Singh, Vice-Chancellor, Jawaharlal Nehru Krishi Vishwavidyalaya, inaugurated a two-day annual research workshop on Energy Requirements in Intensive Agricultural Production at Jabalpur recently. The workshop was attended by eminent scientists. Dr N.S. Randhawa, Deputy Director-General of the Indian Council of Agricultural Research gave the introductory remarks.

Dr Sukhdev Singh emphasised that from the data of the schemes, the major policy issues for energy management should emerge out which should have tangible effects on crop production. He explained through import statistics, as to how vital the energy input and how so important was the necessity for its proper use and of finding out additional sources. He said that one of the energy resources were the bullock carts which were 12 millions in the country.

While addressing the participants, Dr Randhawa suggested that in order to improve upon the efficiency of the programme, coordination committees should be appointed. For the future programmes, he stressed the need for farming systems context, total energy input, uniform approach and determining of energy requirements. To add to the conventional energy sources, Dr Randhawa stressed for the bio-gas production. He said that in the Sixth Plan the study should bring out the complete picture on energy inflows and outflows in the farming systems.

Calicut to start MEd course

The Calicut University has decided to start a regular MEd course from the current academic session. The two-year course will replace the Master of Collegiate Teaching course which was in existence till last year. The new course will be conducted by the Department of Education. To start with fifteen students would be enrolled for this programme.

PM addresses convocation at Delhi Varsity

The young want a cause to fight for and something to rebel against. There is no dearth of either in India or the world. Nor is there need for this attitude to change with age, but too often and too soon the zeal cools down or is dissipated in trivialities and irrelevancies. This and confrontation for its own sake or for narrow ends are self-destructive and even harmful for the nation. Let us not forget that India is a special country at a particularly crucial point in its development, when the world around is in turmoil. We can get bogged down or we can pull overselves out of the morass. It depends on you the younger generation and the intellectuals.

There are of course immediate problems which cause worry. One can understand and sympathize with the feeling of insecurity for fear of unemployment. It is our major concern too because of the human problem and suffering involved and because our progress depends on making the fullest use of our manpower. There must not only be enough jobs which befit the qualifications and expectations of our bright trained young people but they must also contribute towards strengthening the nation.

Not many people can migrate to other parts of the country for work, so it should be our earnest endeavour to provide the people jobs near home but the 'sons of the soil' theory is a pernicious one which narrows down opportunity of elevation to higher posts and deprives the region of greater and more varied talent. Perhaps it is natural to think that if the Bengalis go out of Assam or the Assamese go out of Bengal or the Tamilians from Karnataka, or North and South Indians from Bombay, conditions will improve and more jobs become available for local people. But there are no such simplistic solutions. And any such narrowmindedness, especially which leads to agitations, has reactions in other places, hits development and does not allow employment to increase. Some schemes help in the short term but basically there is only one solution to unemployment and that is development in agriculture and industry in a big way. And that needs a nationwide effort and nationwide nobility for experts and trained personnel.

India's greatness has been her genius for synthesis of culture and ideas. Through the ages she has opened wide her doors to all who came whether to learn, to teach or for refuge. It is not by putting restrictions or isolating oneself that one grows but by wider contacts and interaction with fresh thoughts and new strains. Those cultures have survived and become richer which have welcomed and encouraged such expanding experiences. Apart from India, the best example in our times is that of the USA which promises inducement to attract talent and brains wherever they found.

The pitfalls on our path are many. Danger from outside lies in some form of neo-colonialism and the unceasing effort of other countries to mould our policies to fit in with their global strategies, conceived in the light of their national interest. The methods devised may be subtle or overt, sometimes amounting to considerable pressure. Conditions are sought to be created in which our options are limited. The absence of positive proof of foreign activity does not make it non-existent. Our uncritical acceptance of foreign postulates, be they of the West or the East, be they of the Right or the Left is in itself an indication of how insiduously these influences work. We should not imitate other countries or other systems, nor is it our aim to become improved editions of them. We are Indians and we want to make our country a better India, unique in its history and experiences and unique in the future it envisages for itself.

Education in its widest sense is how to produce balanced personalities, capable of meeting, without undue stress, the contingencies and vicissitudes of life.

Although mankind has made great leaps in knowledge, our minds are largely imprisoned by old imagery and familiar set patterns. An example of outdated language which Buckminster Fuller gives is our reference to the "corners" of the earth, a left-over from the time when people had a different view of the shape of the earth. I have often spoken of the need for creative thinking but only the other day—in fact I bought the book at the recent Book Fair—I came across positive suggestions as to how to add another dimension to the thought process by giving it a lateral direction. According to the author, Mr de Bono, the present vertical direction is concerned with providing or developing concept patterns, while lateral thinking restructures such patterns (which is insight) and provides new ones (which is creativity). One does not preclude the other. "The emphasis is shifted from the validity of a particular pattern to the usefulness of that pattern in generating new patterns". Mr de Bono points out that the purpose of thinking is not to be right at every step but to use it for right conclusions.

What do you expect from life? And how do you avoid disappointment? As a student I came across the following lines, "If a person is primarily after wealth, the world can whip him; if he is primarily after pleasure, the world can beat him; but if a man is primarily growing a personality, then he can capitalize anything that life does to him". And that is half the battle.

[*Excerpts from the convocation address delivered by the Prime Minister, Smt. Indira Gahdhi, at the Delhi University.*]

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Anthropology

1. Ratan Jeet Singh. Age changes in biological variables in transhuman and settled populations: A comparative study of Gaddi Rajputs and Brahmins of sub tehsil of Bharmour, District Chamba and District Kangra, Himachal Pradesh. University of Delhi.

Statistics

1. Patel, Shantibhai Ranchhodbhai. Statistical inference in multivariate modified power series distribution. Sardar Patel University.

Mathematics

1. Datta, Renuka. Thermodynamics of assembly of interacting particles. University of Calcutta.
2. Ghan Shiam Das. On some specified sequencing problems. Meerut University.
3. Sheela, B.V. Development of optimization techniques and their application to some aeronautical problems. Bangalore University.
4. Shivpuri, Saroj. Contributions to theoretical studies in mathematical programming. University of Delhi.

Physics

1. Bagai, Raj Kumar. Studies of defects in float zone silicon crystals and growth of dislocation free crystals. University of Delhi.
2. Chakrabarti, Bibhashranjan. Electric, magnetic and thermo electric properties of antimony selenide and germaniam sulphide crystals. University of Calcutta.
3. Devara, Panuganti China Sattilingai. Study of upper atmospheric winds and radio meteors using meteor wind radar technique. Andhra University.
4. Gupta, Krishna Kant. Some investigations on the statistical properties of laser speckles. I.I.T., Delhi.
5. Gupta, Shanti Swarup. Interaction of microwaves with ferromagnetic layered structures. I.I.T., Delhi.
6. Jatar, Shashank. Study of optical, electrical and photoconducting properties of pure and doped CdS thin films. University of Delhi.
7. Kameswara Rao, B. Studies in thermal expansion of solids. Kakatiya University.
8. Kanti Mal. Collisions, transport and energy transfer of electrons in the ionosphere. University of Delhi.
9. Krishan Lal. Reliability studies of electronic devices operating under environmental stresses. Meerut University.
10. Mollah, Mohiuddin. Thermo and photoinduced charge carrier generation and trapping in dielectric materials. I.I.T., Delhi.
11. Pal, Amitabha. Effect of uniaxial pressure on the structural phase transition of some cobalt complexes. I.I.T., Kharagpur.
12. Patel, Harishchandra Bakorbhai. Studies on growth and perfection of $MoSe_2$ and WSe_2 crystals. Sardar Patel University.
13. Prasannakumar, A. Quasi particle propagation in disordered systems. Bangalore University.
14. Rajender Singh. Study of ultrasonic attenuation in the intermediate state and superconducting state of pure and doped type-1—superconductors. University of Delhi.
15. Ramachander Rao, J. Analysis of some problems in measuring low currents and the design and development of digital electrometer. Kakatiya University.
16. Singh, Bhanu Pratap. High resolution studies of diffuse X-ray scattering from nearly perfect silicon single crystals. University of Delhi.
17. Subba, Loknath. Absolute measurements of cosmic ray muon intensity from 0.2 GeV/C to 2·0 GeV/C in the vertical and inclined directions at lower latitude (26'N). Gauhati University.
18. Venkateswara Rao, Amirisetty. Gel growth and characterization of $KClO_4$ and PbI_2. Sardar Patel University.

Chemistry

1. Balwant Rai. Studies in surface reactions of microcrystalline carbons involving chemisorption of oxygen and nitrogen. University of Delhi.
2. Bandyopadhyay, Bibekananda. Superparamagnetism and thermoremanent magnetization in some fine-grained materials. University of Delhi.
3. Behera, Rajani Kanta. Studies on nitrogen and sulphur containing heterocyclic compounds. Sambalpur University.
4. Bhargava, Krishna Lal. Transition metal complexes of sulphathiazoles. University of Indore.
5. Bhatnagar, Tara. Study of kinetics and mechanism of the oxidation of malonic acid, substituted malonic acids and their esters, chromic acid oxidation and role of manganese (II) in these oxidations. University of Udaipur.
6. Chakrabarti, Kamal Kumar. Studies on humic acids metal complexes. University of Calcutta.
7. Chakraborti, Mrinalkanti. Use of thiourea derivatives in the analysis of noble metals. University of Calcutta.
8. Chandra Kumar. Solution state studies of alkali and alkaline earth cations: Inorganic approach to a biochemical problem. University of Indore.
9. Chauhan, Omveer Singh. Spectrophotometric investigations of water-soluble pyridinol azo dyes. University of Delhi.
10. Das, Surendra Nath. Structural and thermoanalytical investigations of some cabait (II) and nickel (II) complexes. Utkal University.
11. Dutta, Banani. Polarographic studies on metal complexes. I.I.T., Kharagpur.
12. Ghosh, Rita. Vinyl photopolymerization sensitized by benzophenone in presence of peroxide and amine additives. University of Calcutta.
13. Jain, Pramod Kumar. Studies on the pseudohalogen complexes of molybdenum. Meerut University.
14. Kelkar, S.V. Synthesis of heterocyclic compounds, University of Poona.
15. Mukhopadhyay, Madanmohan. Chemical investigation of naturally occurring carbocyclic compounds : Structure elucidation. North Bengal University.
16. Mulimani, Veerappa Hanamanta. Interaction of ionens with DNA. Karnatak University.
17. Nando, Golok Bihari. Structure-property relations of rubber vulcanizates with special reference to lignin-filled rubber mixes. I.I.T., Kharagpur.
18. Sadanani, Narayan Das. Studies on some transition metal complexes of ditertiary phosphines. University of Delhi.
19. Swami, M.S.R. Studies on the chemistry of iron sulphate : Thermal decomposition studies of ferrous sulphate hydrates and basic ferric sulphates and of ferrous sulphate deptahydrate in presence of alkali and alkaline earth carbonates. Utkal University.

Earth Sciences

1. Dixit, B.G. Geology of the area around Math, South Ratnagiri District, Maharashtra. University of Poona.
2. Kalesha, Marella. Clay mineralogy and geochemistry of Kakinada Pentakota shelf sediments east coast of India. Andhra University.
3. Naik, S.D. Photogeological and geomorphological studies of Talikota Area, Bijapur District, Karnatak State. University of Poona.
4. Puranik, Surendranath Chandrashekhar. Iron formations of Nagavi-Doni area, Dharwad District, Karnataka State, India. Karnatak University.
5. Rama Rao, Chaganty. Geoelectrical investigations on some gondwana sedimentary tracts in West Godavari, Andhra Pradesh. Andhra University.

6. Wodeyar, Bhpendra Kumar. Study of the granitic rocks and associated metamorphites of the area around Channapatnamaddur, Bangalore and Mandya Districts, Karnataka, India. I.I.T., Kharagpur.

Engineering

1. Acharya, Pranesh. A study of the dynamic behaviour of embedded ribed and ribless footings subjected to vertical vibrations. I.I.T., Delhi.
2. Bal, Satish. Kinetics of moisture absorption in liquid and vapour phase hydration of paddy for development of pressure parboiling process. I.I.T., Kharagpur.
3. Banerjee, Satyajit. Mechanism of carbon pickup during the sintering of mixed iron graphite composites. I.I.T., Kharagpur.
4. Dasgupta, Pannalal. Covering problems in fault diagnosis and design of digital network and systems. I.I.T., Kharagpur.
5. Gangopadhyay, Chaitanyamay. Studies on preparation and sintering of mixed uranium plutonium monocarbide, mononitride and monocarbonitrine. University of Calcutta.
6. Manider Singh. Cellulosic systems for drug delivery. I.I.T., Delhi.
7. Mohanty, Rajendra Prasad. Some optimization studies for management of multipurpose reservoir system. Sambalpur University.
8. Pain, Pranab Kumar. Kinetics of biological treatment of waste water: Aerobic processes. I.I.T., Kharagpur.
9. Radhakrishna Murthy, Gavini. Methods for impulse voltage stress analysis and computation of surge generator constants in transformer testing. I.I.T., Kharagpur.
10. Radhakrishnan, V.R. Studies on gas dispersion in multi-jet liquid gas ejectors. I.I.T., Kharagpur.
11. Ramachandra Reddy, S. Condensation of vapours of single and binary miscible liquids on vertical tube. Kakatiya University.
12. Ramsay, Melkote Ramdas. Productivity models in techno-economic infrastructural transition. *D.Sc.* I.I.T., Kharagpur.
13. Sasi, K. Studies on some aspects of combined phase fluidization. I.I.T., Kharagpur.
14. Satyanarayana, V.V. Dynamic response of the bridge girders of electric overhead travelling cranes due to imperfect rail joints. I.I.T., Kharagpur.
15. Sharma, Raj Pal. A rational approach for the design of aggregate gradings for asphalt paving mixtures. I.I.T., Kharagpur.
16. Singh, Jai Karan. Some aspects of rainfall analysis, forecasting and its application. I.I.T., Kharagpur.
17. Sivakumar, Lingappan. Some aspects of system identification. I.I.T., Kharagpur.
18. Sreenivasulu, P. Mathematical models for inverse problems in inhomogeneous aquifers. I.I.T., Kharagpur.
19. Suresh Prasad. Development of stress cracks in paddy grain during drying. I.I.T., Kharagpur.
20. Tripathi, Shiva Kumar. Studies on bamboo reinforced storage structures. I.I.T., Kharagpur.

BIOLOGICAL SCIENCES

Biophysics

1. Dutta, Shibani. Biophysical studies of prostaglandins in relation to their abortifacient action: Role of calcium ion in the action. All-India Institute of Medical Sciences, Delhi.

Biochemistry

1. Chakrabarti, Sekhar. Studies on enzymatic synthesis of inositol polyphosphates. University of Calcutta.
2. Khullar, Saroj. Studies on the lipid metabolism in Sesamum plants. University of Udaipur.
3. Kure, Uttam Parmeshwar. Biochemical and immunological studies on BHs Ag antigen. Marathwada University.
4. Kushawaha, Hukam Singh. Biochemical studies on endosulfan. University of Indore.

Botany

1. Anand, Shashi Kanta. Organization, structure and seasonal behaviour of cambium and contiguous tissues in some tropical trees. University of Delhi.
2. Cheema, Kumkum. Histochemical and ultrastructural studies in some Crucifreae: Zygote to seedling. University of Delhi.
3. De, Sibendu. Studies on antibiotic and enzyme producing actinomycetes. University of Calcutta.
4. Gandhi, Varsha Bahen. Histochemical studies during fruit development and seed germination of Cajanus cajan, Vigna radiata and Vigna mungo. University of Delhi.
5. Gupta, Aditya Kumar. Induction of nitrate reductase during seed germination. Jawaharlal Nehru University.
6. Ghosh, Pradyotkanti. Studies on the epidemiology and control of stem rot disease of jute, Corchorus oilt orius L. University of Calcutta.
7. Jawale, Anand Kanaji. Study of Charophytes of Gujarat. Sardar Patel University.
8. Kinkar, V.N. Studies on the biology of Indian marine algae. University of Poona.
9. Kitchlue, Sushma. Histochemical and morphogenetic studies on floral bud callus of Ranunculus sceleratus L. Flower culture: A critical review. University of Delhi.
10. Madhusudana Rao, M. Studies on seedling and corolla-handedness in Papilionateae with special reference to Vigna and Phaseolus spp. and its possible influence on yield. Kakatiya University.
11. Monanadasan, G. Structure and development of phloem in Pteridophtes. Sardar Patel University.
12. Parvathi, A. Chemotaxonomy of some Capparaceae and Moringaceae. Kakatiya University.
13. Ravikumar, C. Studies in the pollen biology of Gloriosa and Amaryllis. Bangalore University.
14. Sharma, Dhruwa Prasad. Studies on the cellulose decomposition by microorganism. University of Saugar.

Zoology

1. Deshpande, Ramesh Chandra. Biological studies on the safflower caterpillar Platysenta conducta Wlk (Lepidoptera-Noctuidae). University of Indore.
2. Hafeeza Banu. Histochemical studies of certain enzymes in the central nervous system of bat (Microchiroptera) with special reference to Medulla oblongata and pons. University of Udaipur.
3. Krishna Rao, Rajanala. Some aspects of skeletal muscle metabolism in the garden lizard, Calotes versicolor (Daudin). Berhampur University.
4. Nageswara Rao, N. Studies on the chromosomes of some Lepidoptera with observations of the occurrence of supernumerary chromosomes in Danaus limniace. Nagarjuna University.
5. Nath, Pranabes. Role of L-ascorbic acid and pyridoxine on certain aspects of protein metabolism in toads, Bufo malanostictus. University of Calcutta.
6. Oommen, Mathew M. Biochemical studies on the cardiac muscles of some vertebrates. University of Kerala.
7. Paramjit. Cytogenetic studies on the chromosomes of Gryllotalpa fossor (Seudder) with special reference to X-chromosome. University of Delhi.
8. Ray, Tusharendu. Studies on Indian copepods. University of Calcutta.
9. Sharma, Sushil Kumar. Studies on the external morphology, ecology and susceptibility of Cyclops species in and around Delhi with special reference to Mesocyclops leuckarti (Claus). Meerut University.
10. Singh, Lala Aswini Kumar. Ecological studies on the Indian Gharial, Gavialis gangeticus (Gmelin) (Reptilia, Crocodilia). Utkal University.
11. Singhvi, Mahendra Singh. Studies on the effect of certain medicinal plant extract, chemical agents and physical factors on testicular structure and function of microchiroptera. University of Udaipur.
12. Unnithan, Vijaya Kumaran. A study on the cyprinid fish Labea gonius (Hamilton). University of Udaipur.

Medical Sciences

1. Chandrashekar Rao, U. Structural analysis of inter medolaterial gray column in Macaca mulatta. All-India Institute of Medical Sciences, Delhi.
2. Dhingra, P.N. Isolation and characterization of chlamydia from animals and production of ocular and general pathological lesions in laboratory animals. All-India Institute of Medical Sciences, Delhi.
3. Harbans Singh. Studies on the action of single silastic implant releasing morethindrone acetate and its further improvements. All-India Institute of Medical Sciences, Delhi.

4. Mustafa, Abu Salim. Immunological evaluation of ultivable mycobacteria for antigen sabroad with M. leprar. All-India Institute of Medical Sciences, Delhi.

5. Paramasivam, S. Central interaction of occabain and propranolol in cardiac arrhythmias. All-India Institute of Medical Sciences, Delhi.

6. Paul, Sudhir. Isolation, characteristics and immunology of syncytial trophoblast from human placenta. All-India Institute of Medical Sciences, Delhi.

7. Prabha, B. Immunocompetence of T-lymphocytes in protein-calorie malnutrition. All-India Institute of Medical Sciences, Delhi.

8. Raghavan, S. Vijaya. Studies on a factor from human seminal plasma, with a promoting effect on fertilization purification and chemistry. All-India Institute of Medical Sciences, Delhi.

9. Ramakrishnan, S. Studies on the fragments and derivatives of beta-sub unit of HCG to elicit anti HCG response. All-India Institute of Medical Sciences, Delhi.

10. Ravindran, P.C. Serum opacity reaction and M-typing of group A beta haemolytic streptococci. University of Delhi.

11. Shastri, Nilabh. Anti-LCG response: Modulation by carriers. All-India Institute of Medical Sciences, Delhi.

12. Swaminathan, S.P. Anti-diuretic hormone, osmoreceptors and fluid electrolyte balance in primates. University of Delhi.

Agriculture

1. Avinashi, Manju Puri. Studies on RNA and protein synthesis during barley embryo germination. Jawaharlal Nehru University.

2. Bhaskaran, C. Critical analysis of the interpersonal communication behaviour of small and other farmers in a less progressive, progressive, and more progressive villages in Kanyakumari District of Tamil Nadu 1980. (UAS-DHA). University of Agricultural Sciences, Bangalore.

3. Bishan Dass. Mineralogical and microbiological properties of soils of Kangra District developed under different bio, climo and lithosequences. Himachal Pradesh Krishi Vishva Vidyalaya.

4. Gohain Phanidhar. Biochemical and physiological studies on Dematophora necatri Hartig causing root rot of apple. Himachal Pradesh Krishi Vishva Vidyalaya.

5. Goydani, Mohan Das. Production potential of direct seeded, rice, wheat and rice-wheat cropping system under input constraints. Jawaharlal Nehru University.

6. More, W.D. Studies on earhead moulds of sorghum 1978 (UAS-DHA). University of Agricultural Sciences, Bangalore.

7. Patil, V.C. Agronomic investigations on bamboo, Dendrocalamus striatus (Roxb) 1980 (UAS-DHA). University of Agricultural Sciences, Bangalore.

8. Sarkar, Asit Kumar. Studies on the effect of different soil manipulation, fertilization and water management practices on the performance of rice. Indian Institute of Technology, Kharagpur.

9. Shelke, Dattatraya Kukaji. Growth, yield and quality of summer groundnut, Arachis hypogaea Linn Var. Latur No. 33 as influenced by different levels of irrigation, phosphorus and antitranspirant. Marathwada Agricultural University.

10. Shirwal, Amrutraj, S. Soil properties on availability of micronutrients, absorption of zinc and response of maize etc., 1980 (UAS-UL). University of Agricultural Sciences, Bangalore.

11. Singh, Brij Pal. Availability of potassium in some Haryana soils in relation to minerals, complementary ions and crops. Haryana Agricultural University.

12. Singh, Shiv Karan. Impact of credit on cropping pattern, income and employment on farms in Hyderabad, Andhra Pradesh, 1979 (UAS-UL). University of Agricultural Sciences, Bangalore.

13. Sudarshan Rai. Stability and adaptation studies in soybean, Glycine max. (L.). Merril. Haryana Agricultural University.

14. Yadav, Dhan Singh. Dynamics of nitrogenous fertilizers in soil plant system. Haryana Agricultural University.

Animal Husbandry

1. Partha Sarathy, M. Recycling of hen's litter as ruminant feed. Haryana Agricultural University.

2. Puttannaiha, G.B. Pathology of endocrine disorders in bovines 1980 (UAS-UL). University of Agricultural Sciences, Bangalore.

3. Sarkar, Priyabrata. Efficacy of complement fixation test on the diagnosis of rabies and latest infection. University of Calcutta.

Additions to AIU Library

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(Continued on page 464)

UNIVERSITY OF INDORE

UNIVERSITY HOUSE,
INDORE-1 (452001)
Dated 17-7-1980.

Advertisement No. Estt/III (15)/79

Applications on the prescribed form obtainable from the University office on payment of Rs. 3/- (in the shape of Crossed Indian Postal Order), are invited for two posts of Lecturer in Education and one post of Lecturer in Economics in the scale of pay of Rs 700-40-1100-50-1600/-

Qualifications

A. (a) (i) A Doctor's Degree or published research work of an equivalent high standard; and

(b) (i) A 2nd class Master's Degree in a relevant subject with atleast 50% Marks (B in the seven point scale) or an equivalent degree of a foreign University; and

N.B.: While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded.

(ii) At least 50% marks at the Bachelor's degree examination on the basis of which division is awarded at the degree level by the University; and

(iii) Atleast 50% marks at the Higher Secondary/Intermediate/Pre-University Examination, as the case may be.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing the following qualifications may be recruited :

B. (i) A second class Master's degree in a relevant subject with atleast 50% marks (B in the seven point scale); and

N.B.: While taking into account the marks/grade, the marks/grade obtained in internal assessment, if any, shall be excluded; and

(ii) 2 years' experience of research work or practical experience in research Laboratory/research organisation; and

(iii) Atleast 50% marks at the Higher Secondary/Intermediate Pre-University examination, as the case may be; and

(iv) Atleast 50% marks at the Bachelors' Degree Examination on the basis of which division is awarded at the degree level by the University.

OR

C. (i) A Master's degree with first class or Grade 'A' in a relevant subject; and

(ii) Atleast 50% marks at the Bachelor's degree examination on the basis of which division is awarded by the University; and

(iii) Atleast 50% marks at the Higher Secondary/Intermediate/Pre-university examination as the case may be.

Provided further that in the case of categories (B) & (C) a candidate will have to obtain a Doctor's degree/M.Phil degree or have to his credit published research work of equivalent standard within 5 years of his appointment failing which he will not earn future increments until he fulfils these requirements.

N.B.

(i) The requirement regarding minimum percentage of marks can be relaxed upto 5% in case of Scheduled Caste/Scheduled Tribe candidates.

(ii) Desirable qualifications for lecturer in Economics—specialisation in any branch of Econometrics, Advanced Economics, Statistics and Industrial Economics.

3. The above scales carry with them A.D.A., H.R.A., Medical reimbursement and C.P.F. benefits as per University Rules. A higher start can be given to deserving candidates.

4. Preference will be given to the Scheduled Caste, Scheduled Tribe and Handicapped candidates if found suitable. Candidates already in service should apply through proper channel. Those who had applied earlier for the post of Lecturers in Education and Economics in response to our Advertisement No. Estt/III(15)/79 dated **29-1-80** need not apply again but they must intimate to the University on or before **30th August 1980** whether they wish their application to be considered. They may also intimate any additional qualifications, experience etc. acquired by them.

5. Applications (8 copies) duly filled in and accompanied with attested true copies of certificates and testimonials and crossed Indian Postal order of Rs. 5/- payable to the Registrar, University of Indore, should reach the undersigned on or before **30th August 1980**. Incomplete applications and applications received after the prescribed date, may not be considered.

6. The University reserves the right to alter the number of posts and to fill-up or not to fill-up the post and/or to call only selected candidates for interview at their own cost.

S.C. Consul
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KHARAGPUR

Advertisement No. R/3/80

Applications are invited for the undermentioned posts at Indian Institute of Technology, Kharagpur (West Bengal).

POSTS

1. Foreman/Mechanical Engineering Department—1 post—(Reserved for Scheduled Caste)
2. Senior Technical Assistant/Computer Centre—2 posts.
3. Senior Technical Assistant/Library—2 posts (1 post reserved for Scheduled Tribe)
4. Senior Technical Assistant/Radar & Communication Centre—2 posts—(Reserved for Scheduled Caste)
5. Senior Technical Assistant/Agriculture Engineering Department—1 post (Reserved for Scheduled Tribe)
6. Senior Research Assistant/Material Science Centre—2 posts.
7. Physical Training Instructor—2 posts (1 post reserved for Scheduled Caste)
8. Physical Training Instructor (Life Saver)—1 post.
9. Technical Assistant/Mechanical Engineering Department—1 post (Reserved for Scheduled Caste)
10. Technical Assistant/Radar & Communication Centre—1 post.
11. Supervisor (Refrigeration & Air Conditioning Plant)/Workshop—1 post.
12. Assistant Security Officer—3 posts (1 post reserved for Scheduled Caste)
13. Sanitary Inspector/Estate Maintenance Unit—3 posts (1 post reserved for Scheduled Caste)
14. Mechanic Gr. 'A'-cum-Driver/Geology & Geophysics Department—1 post (Reserved for Scheduled Caste/Scheduled Tribe)
15. Mechanic Gr. 'A' (Electronics Instruments)/C.I.S.S.—2 posts (1 post reserved for Scheduled Caste/Scheduled Tribe)
16. Mechanic Gr. 'A' (Key Punch Operator)/Computer Centre—1 post (Reserved for Scheduled Caste)
17. Machanic Gr. 'A' (Welder)/Workshop—1 post (Reserved for Scheduled Caste)
18. Mechanic Gr. 'A' (Carpentry)/Workshop—1 post.
19. Mechanic Gr. 'A'/Cryogenics Engineering Centre—1 post.
20. Mechanic Gr. 'A'/Electronics & Elect. Comm. Engineering Department—2 posts (1 post reserved for Scheduled Caste)
21. Mechanic Gr. 'A'/Radar & Communication Centre—1 post.
22. Draftsman/Cryogenics Engineering Centre—1 post.
23. Draftsman/Electronics & Elec. Comm. Engg. Deptt.—1 post.
24. Mechanic Gr. 'B' (Switch Board Operator)/Estate Maintenance Unit—1 post.
25. Mechanic Gr. 'B'/Cryogenics Production Lab.—1 post.
26. Mechanic Gr. 'B'/Post Harvest Technology Centre—2 posts.
27. Mechanic Gr. 'B' (Xerox Operator)/Library—1 post.
28. Mechanic Gr. 'B' (Electrician)/Estate Maintenance Unit—1 post.

9. Mechanic Gr. 'B'/Industrial Management Centre—1 post.
0. Mechanic Gr. 'C' (Diesel Operator)/Estate Maintenance Unit—1 post (Reserved for Scheduled Caste)
1. Mechanic Gr. 'C'/Chemical Engineering Department—1 post (Reserved for Scheduled Tribe)
2. Caretaker-cum-Manager/Estate Maintenance Unit—1 post.

Scale of Pay

Posts Sl. 1 to 6—Rs. 550-25-750-EB-30-900/-
7, 8 & 11—Rs. 425-15-500-EB-15-560-20-640-EB-20-700-25-750/-
9, 10 & 12—Rs. 425-15-500-EB-15-560-20-700/-
13—Rs. 425-15-560-EB-20-640/-
14 to 21—Rs. 380-12-500-EB-15-560/-
22 & 23—Rs. 330-10-380-EB-12-500-EB-15-560/-
24 to 29—Rs. 330-8-370-10-400-EB-10-480/-
30 & 31—Rs. 260-6-326-EB-8-350/-
32—Rs. 380-12-440-EB-15-560-EB-20-640/-

Age : Ordinarily not more than 35 years.

Qualifications & Experiences

(for the post Sl. No. 1)

Diploma in Mechanical Engineering plus 7 years workshop experience or regular apprenticeship for 4 to 5 years in an Industrial Establishment of repute plus 7 years' shop experience in an industrial establishment.

Job requirements

To supervise and to offer guidance to the staff working under him in operation of different machine tools and fabrication of experimental set up of the students; to assist in development plans in different laboratories.

(for the post Sl. No. 2)

Essential

Degree in Computer Science/Engineering

OR

Diploma in Computer Science/Engineering with 5 years experience in repair, maintenance and construction of various types of computer equipments and accessories.

OR

Degree in Science/Mathematics with 8 years experience in repairing, maintenance and construction of various types of Computer equipment and accessories.

Job requirements

Sound knowledge of operating a 3rd generating system with knowledge of Computer Programming.

(For the post Sl. No. 3)

(1) Graduate with a degree or diploma in Library Science of a recognised University. (2) Experience of at least 7 years in a University Library, preferably in a Technical & Engineering Library.

Job requirements

(1) Classification & Cataloguing of Books. (2) Indexing. (3) Accessioning and organising micro documents. (4) Documentation service including compiling current awareness lists, bibliographies, etc. and attending reprographic unit. (5) Any other duties as may be assigned by the Librarian.

(For the post Sl. No. 4 & 5)

Essential

(1) Good general education preferably Intermediate Science or equivalent with Physics, Chemistry & Mathematics. (2) Diploma in specific branch of study or equivalent. (3) Experience of at least 5 years in specified fields in repair, design and construction of various types of equipment and accessories.

Job requirements

(for the post Sl. No. 4)

To design, fabricate and maintain sophisticated electronic equipment and system.

(for the post Sl. No. 5)

(1) Must have sound knowledge in testing, handling, repair, maintenance, operation and control of common electronic instruments used in Agricultural Engineering and Agricultural Sciences. (2) Must be capable of helping U.G., P.G. and Scholars in installation of electronic instruments. (3) Must maintain the stores placed under his charge. (4) Must perform such other duties as may be assigned to him.

(for the post Sl. No. 6)

Essential

(1) A good academic record with a Master's degree in Chemistry/Physics or B.Tech./M. Tech. degree in Ceramics/Selicate Technology/Metallurgy/High Polymer & Rubber Technology/Chemical Engineering. (2) Research experience for at least two years for M.Sc. and one year for B. Tech. candidates.

Desirable

(1) Doctorate degree in respective subject. (2) Familiarity with modern instrumental techniques.

Duty

To assist in the departmental research work and to conduct laboratory classes upto Postgraduate level.

Age

Preferably below 30 years.

N.B. : Those who applied against the Advertisement No. R/1/79 need not apply again.

(for the post Sl. No. 7)

Essential

A Master's degree in Physical Education

OR

A Master's degree in Arts/Science with a diploma in Physical Education from recognised University with a minimum of one year's experience in handling games, sports and cultural activities is essential.

OR

(1) A Bachelor's degree in Physical Education or a Bachelor's degree in Arts/Science with a diploma in Physical Education with a minimum of 3 years' experience in handling games, sports and cultural activities. (2) Proficiency in games and sports.

Desirable

(1) Diploma from NIS (2) Proficiency in music or dramatics will be an added qualification.

Age

Between 25 and 30 years.

(for the post Sl. No. 8)

Essential

(1) A Master's degree in Physical Education

OR

A Master's degree in Arts/Science with a diploma in Physical Education from a recognised University with a minimum of one year's experience in handling games, sports and cultural activities.

OR

A Bachelor's degree in Physical Education or a Bachelor's degree in Arts/Science with a Diploma in Physical Education with a minimum of 3 years' experience in handling games, sports and cultural activities.

(2) Certificate in Life Saving from a recognised Association.

(3) Proficiency in Swimming and Life Saving.

Desirable

(1) Proficiency in music or dramatics will be added qualifications. (2) Diploma in NIS in Swimming.

Age

Between 25 and 30 years.

(for the posts Sl. No. 9 & 10)

Intermediate Science or equivalent plus all round workshops and Lab. training for not less than 5 years or Bachelor's degree in Science or a Diploma in specified branch of study plus adequate Laboratory and workshop training.

Job requirements

(for the post Sl. No. 9)

To maintain laboratory equipments and instruments; to execute development plans of the different laboratories.

(for the post Sl. No. 10)

(1) To repair and maintain electronic instruments and equipment used in microwave and antenna laboratories. (2) To fabricate simple waveguide components.

(for the post Sl. No. 11)

Same as that for Foreman (Sl. No. 1) except that the length of experience may ordinarily be 3 years. Must have acquired sufficient skill in his trade and trades.

Job requirements

(1) Should have sound knowledge of theory & practice of Refrigeration and Air-conditioning plants and small units. (2) Should be capable of installing, locating faults (both electrical and mechanical aspects) of the Central Air-conditioning plants, small air-conditioning and Refrigeration Units of various make and carry out repairs to the same independently. (3) Should be able of installing, locating faults (both electrical and mechanical aspects) of the various types of Water-coolers and carry out repairs to the same independently. (4) Organise and guide mechanics of the Refrigeration Section and Air-conditioning Plants for carrying out servicing and preventive maintenance. (5) Should be familiar with specifications of components and spares and draw up estimates for repair and assist Superintendent of Workshops/Asstt. Workshop Supdt. in procurement and maintenance of spare part stock.

(for the post Sl. No. 12)
Essential

(1) Should be at least a Matriculate or equivalent. Preference will be given to candidates with higher qualifications. (2) Should have Military or N.C.C. Training and also Training in Fire-fighting work. (3) Should have atleast three years' experience in the supervisory capacity in Police/in a big security organisation. (4) Should be able to ride Motor Cycle and handle Fire Arms. (5) Must be sound health and active habits. (6) Should be conversant with security rules and procedures to deal with the police and public.

Age

Preferably within 45 years.

(for the post Sl. No. 13)
Qualifications

Diploma (two years) course or Certificate (two years) course in Sanitaryship or equivalent; obtained after passing Matriculation or equivalent general education. About three years relevant experience.

Job requirements

(1) To maintain sewage disposal works, garbage disposal works, sullage and surface drains and undertake mosquito control works. (2) To handle departmental staff for municipal service. (3) To work on Shift duty. (4) Any other work as may be assigned by his superior In-charge or Director.

(for the post Sl. No. 14 to 21)

(1) Good general education preferably Matriculate or equivalent. (2) 15 years experience including apprenticeship in a recognised workshop relaxable in case of higher technical proficiency. (3) Ability to manufacture, construct and erect from working drawings and ability to make simple dimensioned sketches. (4) Ability to work within prescribed tolerances. (5) Knowledge of Hindi and Blue Printing reading. (6) Ability to impart instructions (Desirable).

Job requirements
(for the post Sl. No. 14)

Driving and maintenance of two heavy vehicles (drilling rig and seismic truck) and light vehicles (jeeps—both petrol and diesel operated, and cars). Minimum 5 years experience in driving, maintenance and repair of Motor vehicles in a reputed garrage. Must possess heavy vehicles driving Licence.

(for the post Sl. No. 15)

(1) Ability to trace electronic circuits and detect faults in electronic instruments used in educational and research institutions and to repair these instruments. (2) Ability to fabricate electronic circuits and instruments from working drawings; adequate knowledge of valve and transistor characteristics and of basic electronic circuits. (3) Ability to calculate to the details of winding from small transformers, cells etc. and to fabricate transformers and chesis for electronic instruments.

(for the post Sl. No. 16)

(1) Ability to give 14000 Key depression in IBM 029/026 machines. (2) Knowledge of operating and repair of unit record m/cs.

(for the post Sl. No. 17)

Competency in different types of welding capacity to operate and knowledge of different specialised welding equipments and technique. (*ii*) Ability to fabricate welded components from working drawings.

(for the post Sl. No. 18)

(1) Should have knowledge in all types of joinery and cabinet making works. (2) Should be able to work independently from Blue-Printings. (3) Should be able to calculate the quantity of material required for making some furniture. (4) Knowledge on wood working machine and of polishing work.

(for the post Sl. No. 19)

(1) Good practical competence as machinist to handle Lathe, Milling and Drilling Machines. (2) Experience in handling and fabricating cryogenic instruments. (3) Ability to fabricate/assemble high vacuum/Low temperature systems.

(for the post Sl. No. 20)
Essential

(1) Should be capable of finding faults in defective electronic instruments and undertake to repair the same (2) Should have knowledge of electronic components, valves transisiors and their characteristics. (3) Should be capable of fabricating of electronic circuits from given designs.

Desirable

Knowledge of digital circuits and IC circuits.

(for the post Sl. No. 21)
Essential

(1) Should be capable of finding faults in defective electronics instruments and undertake to repair the same. (2) Should have knowledge of electronic components, valves, transistors and their characteristics. (3) Should be capable of fabricating electronic circuits and given designs.

Desirable

Knowledge of fabrication of printed circuits and knowledge of digital circuits and IC circuits.

(for the posts Sl. No. 22 & 23)
Qualifications & Experiences : Essential

(1) Must have passed Matriculation or equivalent. (2) Should have a certificate or Diploma in Draftsmanship or have at least 3 years' experience as a Tracer & Draftsman in an Engg. Establishment. (3) Must have 2 years experience in a Drawing Office in an Engg. Establishment or in Educational Institute.

Desirable

Ability to produce finished drawings independently from rough sketches.

(for the posts Sl. No. 24 to 29)

Same as for Mech. Gr. 'A' except that the length of experience should not be less than 8 years.

Job requirements
(for the post Sl. No. 24)

(1) To operate the switchgear both H.T. & L.T. and to give shut-down as per I.E. rules. (2) To diagonise the fault of the switchgear and be able to rectify the same independently. (3) To take reading of the different meter and to maintain the log book and to write report in English about breakdown. (4) To attend overhead breakdown work. (5) To attend round-the-clock duty including night shift. (6) Any other duties assigned by the authority.

(for the post Sl. No. 25)

Operation and Maintenance of cryogen production machines and high vacuum equipment. Experiences in handling fabricating machines for making components for cryogen production and research instruments.

(for the post Sl. No. 26)

(1) Must be conversant with work involving fitting and fabrication. (2) Able to read blue prints and make simple sketches of machine tools, fitting and fabrication. (3) Conversant with the use of mechanical measurements and instruments. (4) Maintenance of Mechanical tools & equipment which are used in fabrication work. (5) Should have some experience in rice processing machinery fabrication.

Desirable

Experience of Carpentry work.

(for the post Sl. No. 27)

He will be required to operate, maintain and service the Xerographic copying machines and their auxiliaries. He should be capable of taking various types and sizes of copies including copying from microfilms. He will also have to maintain stock register and to place books and journals, in the stack in proper order.

(for the post Sl. No. 28)

Experience in operation and maintenance of motor starters, switches for electrical pumps. Maintenance of distribution board in sub-station and pump houses and ceiling fans. To attend round the clock duty and shift duty at night hours, when required.

Workman's permit in Part I, II and III.

(for the post Sl. No. 29)

Must be (1) able to operate Industrial Engineering Laboratory equipments, (2) conversant with the operation and maintenance of audio-visual aids like projectors, epidioscope, etc., (3) able to fabricate laboratory models from the design and drawing, (4) conversant with operation and maintenance of electrical and electronic equipments like electric motors, XY recorder, multimeters, work analog apparatus etc. Acquaintance with operation of standard M/c tools measuring instruments in addition to the above. will be preferred.

(for the posts Sl. No. 30 & 31)
Qualifications & Experiences

Same as that for Mech. Gr. A as in Sl. No. 14 above, except that the length of experience need not be more than 5 years and that he shall not be expected to have high degree of skill in handling more than one machine of his trade.

Job requirements
(for the post Sl. No. 30)

(1) Knowledge of operation and Maintenance of Diesel Generating set. (2) Knowledge of minor repair of the Diesel set. (3) Knowledge of Electri-

cal handling equipments. (4) To attend round the clock duty and shift duty at odd hours.

(for the post Sl. No. 31)

Experience in fabrication, fitting, maintenance and repairing of Chemical Engineering Laboratory equipments like distillation plants, compressors, pumps, boilers etc. in different workshop practices like welding, bench fitting etc.

OR

Experience in different type panel board fitting, repairing and maintenance of motors, pumps attached to Chemical Engg. Laboratory equipments.

Desirable

Experience in running of Ammonia printing, duplicating machines and laboratory works will be considered as additional qualification.

(for the post Sl. No. 32)

(1) Must be Matriculate or equivalent. (2) Should have at least 5 years' experience as Manager/Caretaker in a responsible residential establishment like staff hostel, guest hostel or a reputed hostel. Should be of sound health and active habits and capable of dealing with distinguished personalities.

Job requirements

(1) Will supervise the work of Class IV staff (2) Will be responsible to arrange to sweep the classroom floor and dust the furnitures in the class rooms. (3) Will be responsible to arrange to sweep the corridors, common places, approach roads, open areas, etc. as required. (4) Will be responsible for the daily cleaning of toilet rooms with water, phenyl etc. and removal of chokage of the toilet outlets and drains. (5) Will be responsible to maintain small stores of sanitary items and arrange for its daily issue and also maintain proper accounting of same. (6) Will be responsible for spraying insecticides for killing white ants, rats and other insects, worms, etc. (7) Will be responsible for collection of waste papers and disposing them of as directed. (8) Will be responsible to arrange, furniture and other facilities for meetings, conferences, seminars, gatherings, etc. and also arrange to clean the places after the function is over and also be responsible to clean the surface drains in and around the buildings. (8) Will be responsible for garbage cleaning works. (10) Any other work as may be assigned to him by his superiors.

Applications on plain paper, stating Name, Father's Name, Present Address, Permanent Address, Qualifications & Experiences in detail, Date of Birth, Nationality, etc. in English accompanied with an application fee (non-refundable) of Rs 3.00 (Re 0.75 for SC/ST) for Category No. from 1 to 13 and of Re 1.00 (Re 0.25 for SC/ST) for other categories payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur at Kharagpur-2 Post Office should reach the Registrar, I.I.T., Kharagpur (West Bengal) by the **30th August, 1980.**

Candidates belonging to Scheduled Caste/Scheduled Tribe community must enclose attested copies of caste certificates from the competent authority.

Applicants who are in the employment of Government/Semi-Government organisations or of any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

ANDHRA PRADESH AGRICULTURAL UNIVERSITY
ADMINISTRATIVE OFFICE 'RAJENDRANAGAR'
HYDERABAD-30

Advertisement No. 5/80 **Dated 18-7-1980**

Applications are invited for the following posts in the Faculty of Veterinary Science in the Andhra Pradesh Arricultural University.

Applications along with the Registration fee of Rs. 5/- should reach the Registrar on or before **31-8-1980.**

Post & Scale of Pay	No. of posts	Qualifications
1. Associate Professor (Vety. Anatomy)	1	(a) **Essential** (i) Ph.D. degree or any other equivalent degree in the subject concerned or should have published work of an equally high standard in addition to Master's degree in the subject concerned. (ii) Experience of five years in teaching and/or research and/or extension in the subject concerned. (iii) Other things benigequal, prefreence shall be given topersons possessing a basic professiona degree in the Faculty concerned. (b) **Desirable** : Published research work to credit.
2. Associate Professors (Animal Science)	2	
3. Research Officer (Buffaloe Nutrition Scheme in Animal Science Department)	1	
4. Associate Professor (Vety. Microbiology)	1	
5. Associate Professor (Vety. Medicine)	1	
6. Associate Professor (Vety. Pathology)	1	
7. Associate Professor (Vety. Parasitology)	1	
8. Poultry Specialist (Poultry Science)	1	
9. Associate Professor (Dairy Science/ Poultry Science)	1	
10. Scientist I.R.D.C. Unit (Vety. Medicine/ Vety. Microbiology/ Vety. Pathology/Vety. Parasitology/Vety. Gynaecology)	1	

Scale of Pay for all the above posts
Rs. 1200-50-1300-60-1900/-

(i) Applicants should appear for interview before the selection committee at their own cost.

(ii) Selected candidates are liable to be transferred to any equivalent posts in teaching, research and extension in the University.

(iii) Selected candidates will be governed by Andhra Pradesh Arricultural University Conditions of Service.

(iv) Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Administrative Office, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in cash or through postal order UNCROSSED.

T. Narayan Reddy
REGISTRAR

UNIVERSITY OF ROORKEE

Advertisement No. EST(A)/16/7/80

Applications on prescribed forms, obtainable from the Registrar either personally or by sending self-addressed envelope (9" x 4") with 90 paise stamps and required application fee as mentioned below through bank draft payable to Registrar, University of Roorkee at State Bank of India, University of Roorkee Branch, Roorkee, U.P. or paid in cash at University counter, are invited for the following posts. Higher starting salaries in the grade may be offered to candidates depending on their qualifications and experience. Residential accommodation, if available, will be offered at 10% of the salary or standard rent, whichever is less. Contributory Provident Fund and Dearness Allowance will be admissible as per University rules. The age of superannuation is 60 years. Applicants should not be above 55 years. Applications complete in all respects should be sent to the Registrar so as to reach him on or before **15.9.80** (15-10-80 for overseas applicants). Candidates in employment are required to send their applications through proper channel. Applications received late/incomplete may not be entertained.

R —Regular
T —Temporary
TLR —Temporary likely to become regular

Post	Scale of Pay	Application Fee to be Remitted
Professor :	Rs. 1500-60-1800 100-2000-125/2-2500.	Rs. 10.00
Reader :	Rs. 1200-50-1300-60-1900,	Rs. 7.50
Lecturer :	Rs. 700-40-100--50-1600	Rs. 5.00
Other posts:	As mentioned against each	Rs. 3.00

Current rate of Dearness Allowance: (51.5% of basic pay) (subject to a maximum of Rs. 460/- p.m.)
Essential Qualifications, where not mentioned, are given at the end. The specialisation and number of posts for different categories are given below:

1. ARCHITECTURE AND PLANNING DEPARTMENT

Reader in Ecology—One (R)
Specialisation—Ecology
Reader—One (R) Two (TLR)
Specialisation

1. Architecture
2. Building Science
3. Urban Design
4. Tropical Architecture
5. Architectural Engineering
6. Landscape Architecture
7. Housing
8. Environmental Planning and Design
9. Town & Country Planning

Lecturer—Four (TLR)
Specialisation

1. Architecture
2. Building Science
3. Urban Design
4. Tropical Architecture
5. Architectural Engineering
6. Landscape Architecture
7. Housing
8. Environmental Planning and Design
9. Town and Country Planning

Lecturer in Applied Arts—One (TLR)
Specialisation—Applied Arts

NOTE: Candidates called for interview for the post of Lecturer may be considered for appointment as teaching assistants on a fixed salary of Rs. 950/- or Rs. 850/- p.m.

2. BIO-SCIENCES DEPARTMENT

Professor—One (R)

Specialisation

Microbial Biochemistry/Enzyme Chemistry and Allied Fields.

3 CHEMISTRY DEPARTMENT

Professor—One (T)

Specialisation

An Organic Chemist with specialisation in areas other than Physical Organic Chemistry and Natural Products Chemistry can also be considered.

Lecturer—One (R) Two (T)

Specialisation

Analytical/Inorganic
Physical/Organic Chemistry.

4. Continuing Education Department

Reader—One (R)
Qualifications: **Essential**

(A) A Doctor's Degree with Master's/or Bachelor's Degree in Civil/Electrical Mechanical.

OR

A Master's Degree with published work of Ph.D. standard.

(B) 5 year's experience of office administration.

(C) 12 year's experience of Teaching/Research/Design and Industry with at least two years in Teaching/Research.

Desirable

(A) Experience in Guidance of Research.

(B) Teaching Experience in an Institution of University level.

(C) Published research work/diploma.

Specialisation

(A) Training on Adult Education or Personnel Management.

(B) Experience in running courses for inservice engineers.

(C) Experience in Continuing Education work.

Field Officers fufilling the above qualifications may also be considered for deputation.

5. Electrical Engineering Department

Professor—Two (R)
Specialisation

One each in the following fields: (i) Electric Machines and Drives. (ii) High Voltage Engineering.

Reader—One (R)

Specialisation

High Voltage Techniques.

Reader—Three (T)

Specialisation

One each in the following fields: (i) Design of Instruments. (ii) Any area in Power System Engineering (iii) Power Apparatus and Electrical Drives/Power System Engineering/Measurement and Instrumentations/System Engineering and Operations Research.

Lecturer—Three (R)

Specialisation

(i) Two in Electrical Machines and Drives. (ii) One in any area related to power Apparatus and Electrical Drives/Power System Engineering/Measurement and Instrumentations/Systems Engineering and Operations Research.

Lecturer—One (T)

Specialisation

Any area related to Systems Engineering and Operations Research.

6. Earth Sciences Department

Professor—One (R) One (T)

Specialisation

(a) Engineering Geosciences—(1 R)
(b) Geophysics. Modelling of Geophysical System/Signal Processing (1 T)

Persons with Ph.D. in Geology/Geophysics/Mining Engg./Physics/Civil Engg./Electrical Engg. can be considered.

Reader—One (R) One (TLR) One (T)

Specialisation

Economic Geology/Structural Geology/Geochemistry/Igneous and Metamorphic Petrology/Mathematical Geology/Mining Geology/Engineering Geology/Remote Sensing and Photo-Geology.

Lecturer—One (TLR)

Specialisation

Economic Geology/Structural Geology/Geochemistry/Igneous and Metamorphic Petrology/Mathematical Geology/Mining Geology/Remote Sensing and Photo-Geology.

Persons with Ph.D. in Analytical Chemistry may also be considered.

Lecturer (Geophysics)—Two (R)

Specialisation

(a) Electronic Instrumentation (1 R)
(b) Electrical & Electromagnetic (1 R)

Research Associate—One (T)

Rs. 1000/-, Rs. 1200/- or Rs. 1400/- p.m. consolidated.

Qualifications: **Essential**

(a) Doctor's Degree/Master's Degree in Applied Geology Geotechnical Engg./Mining Engg. with published work.
(b) Consistently good academic record.

7. Earthquake Engineering Department

Professor—One (R) One (T)
Specialization : Soil Dynamics
Reader—Two (R) Three (T)

Specialisation

(a) Structural Dynamics (1 R+1 T)
(b) Soil Dynamics (1 R+1 T)
(c) Seismology (1 T)

Lecturer—One (R) One (TLR) Two (T)

Specialization
(a) Structural Dynamics (1 R+1 TLR)
(b) Soil Dynamics (2 T)

8. Electronics & Communication Engineering Department

Professor—Three (R) Two (T)
Specialisation
(a) Control and Guidance (1 R)
(b) Electronics Circuits (1 R)
(c) Computer Science (1 R)
(d) Communication System (1 T)
(e) Microwave (1 T)
Reader—Four (R) Two (TLR) One (T)
Specialisation
(a) Solid State Electronics (2 TLR)
(b) Computer Science (1 R)
(c) Medical Electronics (1 R)
(d) Electronics Instrumentation (1 R)
(e) Television Technology (1 R)
(f) Control and Guidance (1 T)
Lecturer—One (R) Two (TLR) Three (T)
Specialisation
(a) Control and Guidance (1R/TLR)
(b) Communication System (2R/TLR)
(c) Communication System (1 T)
(d) Solid State (1 T)
(e) Microwave (1 T)

Note

Persons who have already applied for the above posts in Electronics & Communication Engineering Department against Advertisement No. EST (A) 13/7/79, dated 19-7-1979 need not apply again.

Research Technician—One (T)
Scale of Pay
Rs. 450-25-575-EB-25-700-EB-30-850.
Qualifications
BS.c. or three years Diploma in Electronics/Radio Engineering/T.V. Technology and Computer Technology with seven years experience.

9. Humanities and Social Sciences Department

Professor—One (T)
Specialisation
English/Economics/History/Psychology.
Reader—Two (R)
Specialisation
(a) Organizational Behaviour / Industrial Psychology (1 R)
(b) Managerial and Labour Economics/General Management (1 R)
Lecturer (English)—One (T)
Lecturer (French)—One (R)
Lecturer (Hindi)—One (T)

Note

Persons who have already applied for the above posts in Humanities & Social Sciences Department against the Advertisement No. EST(A)/15-10-79, dated 13-10-79 and EST(A)/12-5-79 dated 28-5-1979 need not apply again.

10. University Health Centre

Medical Officer—One (T)
Scale of Pay
Rs. 550-30-700-EB-40-900-EB-50-1200+NPA+Rent free unfurnished accommodation+P.G. allowance, if entitled+Outdoor duty allowance.
Qualifications : Essential
M.B.B.S. with three years experience.
Desirable
M.D. or Diploma in Anaesthesia or Pathology.

Note

He shall be required to do general duty in the hospital in addition to work in his field of specialization.

Dental Surgeon—One (T)
Scale of Pay
Rs. 500-25-650-30-800-50-1000.
Qualifications: Essential
BDS from a recognised University with atleast 3 years experience of working in a Hospital.
Desirable
MDS Degree

11. Industrial Management Centre

Professor (Management)—One (R)
Qualifications: Essential

(a) A Doctor's Degree in any field of Business/Industrial Management.

OR

A Doctor's degree in Psychology/Sociology/Economics with Master's Degree in Business/Industrial Management.

OR

A Degree in Engineering plus Master's Degree in Business Management.

(b) At least 12 years experience of Teaching/Research/Industrial or Business Management.

Desirable

(a) Wide Industrial and Research background preferably in some field of Management Science.

(b) Ability to organise Master's and Doctor's level programme.

(c) Teaching and/or research experience in an institution of University level.

12. Library

Deputy Librarian—One (T)
Scale of Pay
Rs. 800-50-1050-EB-50-1300-EB-50-1450.
Qualifications: Essential

(a) Atleast II Class Master's Degree with B.Lib. Science.

OR

Atleast II Class graduate with M. Lib. Science.

(b) 5 years experience (minimum) of Library work on a responsible post in a University or large Library.

Desirable

(a) Published work or research publication.

(b) Adequate knowledge and experience of modern techniques of reference service and documentation service in Research Organisation or University Library.

13. Mechanical & Industrial Engineering Department

Professor—Two (R) Three (T)
Specialization
(a) Industrial Engineering (1 R)
(b) Turbomachinery/Fluid Mechanics/Heat Transfer/Refrigeration and Air-conditioning (1 R)
(c) Machine Design (1 T)
(d) Welding Engg./Foundry Engg./Metal Forming (1 T)
(e) Applied Thermoscience (1 T)
Reader—Five (TLR)
Specialization
(a) Machine Design (2 TLR)
(b) Production Industrial Engg. (1 TLR)
(c) Applied Thermoscience (1 TLR)
(d) Machine Design/Production Engg./Industrial Engg./Applied Thermoscience (1 TLR)
Lecturer—One (R) Four (TLR)
Specialization
Machine Design/Production Engineering/Industrial Engineering/Applied Thermoscience.
Assistant Superintendent (Workshop)—One (T)
Scale of Pay
Rs. 550-30-700-EB-40-900-EB-50-1200.
Qualifications : Essential

A Master's Degree in Mechanical/Production/Industrial Engineering with atleast one year Shop Floor experience.

OR

A Bachelor's Degree or equivalent in Mechanical/Production/Industrial Engineering with 5 years experience, out of which at least 2 years should be Shop Floor experience and minimum of 2 years teaching experience of subjects related to Workshop Technology at University level.

Desirable
Administrative experience of Engineering Workshop.

14. Mathematics Department

Lecturer—Three (T)
Specialization
Pure/Applied Mathematics.

15. Metallurgical Engineering Department

Reader—One (TLR) Two (T)
Specialization
(a) Physical Met. (1 TLR+1 T)
(b) Extractive Met. (1 T)
Lecturer—One (R) One (T) One (TLR)
Specialization
(a) Any branch of Met. Engg. (1 R)
(b) Any branch of Met. Engg. (1 T)
(c) Any branch of Met. Engg. (1 TLR)
Research Technician—One (R)
Scale of Pay
Rs. 450-25-575-EB-25-700-EB-30-850.
Qualifications
B.Sc. or Diploma in Engg. with seven years experience in maintenance of Electrical & Electronics equipments in Metallurgical Labs.
Specialisation
Repair of Electronics equipment in Metallurgical Laboratories.

16. Physics Department

Lecturer—One (R) One (TLR)
Specialisation

Experimental Physics with good expertise in Electronics preferably in the following field of specialization.

Microwave/Laser/Digital Electronics/Integrated Circuits/Industrial Electronics/Atmospheric Physics/Solid State Physics/Nuclear Physics.

Research Associate—One (T)
(Rs. 1400/- 1200/- or Rs. 1000/- consolidated)
Qualifications : Essential

(a) A Doctor's Degree or published work of an equally high standard.

(b) Consistently good academic record with 1st or high 2nd (B+) Master's Degree or an equivalent qualifications.

Specialisation

(a) Theoretical/Experimental Solid State Physics (Transport, Magnetic and Electrical Properties) and

(b) Physics of Collision Processes. (Non-Linear Phenomenon ion molecule reactions etc.)

Research Assistant—One (T)
(Scale Rs. 350-700)

Qualifications : Essential

Dipoma in Electronics Engineering with lleast 7 years practical experience in Instrumentation or in similar job.

Desirable

Experience of handling and repairing sophisticated instruments with Electronic circuits.

17. Regional Computer Centre

System Manager (Hardware) One (R)

Scale of Pay

Rs. 1100-40-1300-50-1600.

Qualifications

Master's or P.G. Diploma in Computer Technology/or Master's Degree in Engg./or Ph.D. Science. Specialised experience in Computer Hardware.

Experience

7 years experience of teaching/research, design and industry/system management/system hardware.

System Manager (Software) One (R)

Scale of Pay

Rs. 1100-40-1300-50-1600.

Qualifications

Master's or P.G. Diploma in Computer Technology/or Master's degree in Engineering/or Ph.D. in Science. Specialised experience in Computer Software.

Experience

7 years experience of teaching/research, design and industry/system management/system software.

Lecturer—Two (T)

Qualifications : Essential

(a) Master's Degree in Computer Science with good academic record.

(b) Two years professional experience.

Desirable

Doctor's Degree in Computer Science.

18. Sports Association

Sports Instructor—One (T)

Scale of Pay

Rs. 300-600.

Qualifications

Intermediate with Diploma in Physical Education.

OR

Sportsman of National level. Must have won prizes in National or International Sports Organisations, and must have gained certified efficiency in sports instructions.

Experience

Five years in one of the following sports activities :

1. Swimming 2. Foot Ball 3. Volley Ball 4. Basket Ball 5. Gymnastics.

19. University Service and Instrumentation Centre

Research Technician—One (R)

Scale of Pay

Rs. 450-25-575-EB-25-700-EB-30-850.

Qualifications

B.Sc. or three years Diploma in Electronics with seven years experience. Experience may be relaxed for M.Sc. (Physics) candidates having good academic record. Preference will be given to candidates having experience of operation and maintenance of sophisticated instruments.

Assistant Engineer—One (T)

Scale of Pay

Rs. 550-1200.

Qualifications

Bachelor Degree in Electrical/Electronics or M.Sc. (Physics) with two years research experience in experimental Physics. Candidates having experience on working of sophisticated instruments will be preferred.

20. Water Resources Development Training Centre

Professor—One (R)

Specialisation

(a) All aspects of water use and management.

(b) Mathematical modelling for conjunctive use of surface and ground waters/optimization of production.

Director Technical Publications—One (R)

Scale of Pay

Rs. 1500-60-1800.

Qualifications : Essential

(a) A Doctor's Degree with Master's/ or Bachelor's Degree in Engineering.

OR

A Master's degree with published work of high standard.

(b) 10 years experience of teaching/ research/design or construction in any branch of the profession related to Water Resources Engineering.

Desirable

(a) Proficiency in languages with a flair for writing, experience of technical publishing.

(b) Experience in teaching in an institution.

Reader—Three (T)

Specialization

(a) Civil Engineering Design of Hydroelectric Power Houses (1 T)

(b) Finite Element Method preferably with background of Geotechnical Engineering (1 T)

(c) Design and Operation of Hydro-Mechanical Equipment with Civil or Mechanical Engg. background (1 T)

21. Institute of Paper Technology, Saharanpur.

Head of the Paper Department—One (T)

Scale of Pay

Rs. 1150-50-1400-EB-50-1700.

Qualifications: Essential

(a) At least high second class M.Sc. Degree in Chemistry or Applied Chemistry/Bachelor's Degree in Chemical Engg. or Chemical Technology.

OR

First Class Diploma in Pulp and Paper Technology of at least two years duration after B.Sc. (with Chemistry, Physics & Maths) OR Equivalent.

(b) About 10 years experience in Teaching/Research/Consultancy/Paper Industry, in the field of Paper Technology in responsible position.

Desirable

(a) Doctorate Degree in Chemistry/ Applied Chemistry/Chemical Technology/Chemical Engg. allied to the field of Pulp & Paper Technology.

(b) Corporate membership of recognised professional Institutions.

Head of the Pulp & Recovery Department—One (T)

Scale of Pay

Rs. 1150-50-1400-EB-50-1700.

Qualifications : Essential

(a) At least high second class M.Sc. Degree in Chemistry or Applied Chemistry/Bachelor's Degree in Chemical Engg. or Chemical Technology.

OR

First Class Diploma in Pulp and Paper Technology of at least 2 years duration after B.Sc. (with Chemistry, Physics & Mathematics) OR Equivalent.

(b) About 10 years experience in Teaching/Research/ Consultancy/Paper Industry/in the field of Pulp Technology and/or Recovery of Chemicals from spent liquor available from Pulp Mill, in responsible position.

Desirable

(a) Doctorate Degree in Chemistry/ Applied Chemistry/Chemical Technology/Chemical Engg. applied to the field of Pulp and Paper Technology.

(b) Corporate membership of recognised professional institutions.

Head of the Electrical and Instrumentation Department—One (T)

Scale of Pay

Rs. 1150-50-1400-EB-50-1700.

Qualifications : Essential

(a) At least high second class M.Sc. Degree in Radio Physics or Electronics/Bachelor's Degree in Electrical Engg. or Electronics or Instrumentation/D.M.I.T. in Instrumentation OR equivalent.

(b) About 10 years experience in Teaching/ Research/Consultancy/ Industry in the field of Electrical Engineering and/or Process Instrumentation in responsible position.

Desirable

(a) Doctorate Degree in Electrical Engg./Electronics/Instrumentation.

(b) Practical experience in Pulp, Paper and Allied Industries in the field of Electrical Engineering and/or Process Instrumentation in responsible position.

(c) Corporate membership of recognised professional Institutions.

Head of the Mechanical Engineering Department—One (T)

Scale of Pay

Rs. 1150-50-1400-EB-50-1700.

Qualifications: Essential

(a) At least high second class Bachelor's Degree in Mechanical Engineering OR equivalent.

(b) About ten years experience in Teaching/ Research/Consultancy/Industry in the field of Mechanical Engineering in responsible position.

Desirable

(a) Doctorate Degree in Mechanical Engg.

(b) Practical experience in Pulp, Paper and Allied Industries. in the field of Mechanical Engineering in responsible position.

(c) Corporate membership of recognised professional Institutions.

Lecturer in Pulp—One (T)

Lecturer (Maths)—One (R)

Lecturer (Electrical)—One (R)
Senior Instructor (Mech. Engg.)—One (T)

Scale of Pay

Rs. 800-50-1050-EB-50-1300-EB-50-450.

Qualifications : Essential

(a) At least High Second Class Bachelor's Degree in Mechanical Engineering OR equivalent.

(b) Five years experience in Teaching/Research/Consultancy/Industry, in the field of Mechanical Engineering in responsible position.

Desirable

(a) Doctorate Degree in Mechanical Engineering

(b) Practical experience in Pulp, Paper and Allied Industries in the field of Mechanical Engineering in responsible position,

(c) Corporate Membership of recognised professional institutions.

Following are the requirements of qualifications and experience etc. for the posts for which the qualifications and experience are not listed above :

Qualifications for Engineering Department

Professor

Qualifications : Essential

(a) A doctor's Degree and published work of high standard.

(b) Experience in guidance of research.

(c) 12 years experience of teaching/research/design and industry in appropriate field with at least 5 years in the teaching/research.

Desirable

(a) Teaching experience in an institution of University level.

(b) Specialised industrial experience in the appropriate field.

Readers

Qualifications : Essential

(a) A Doctor's Degree with Master's or Bachelor's Degree.

OR

A Master's Degree with published work of Ph.D. standard.

(b) 7 years experience of teaching/research/design and industry in appropriate field with at least 2 years in teaching/research.

Desirable

(a) Experience in guidance of research.

(b) Teaching experience in an institution of University level.

(c) Published research work.

Lecturers

Qualifications : Essential

(a) A Master's Degree with good academic record.

(b) 2 years professional experience.

Desirable

Doctor's Degree.

Qualifications for Architecture and Planning Department

Professor

Qualifications : Essential

(a) A Master's Degree or an equivalent qualification with good academic record.

(b) 12 year's experience of teaching/research professional in appropriate field with at least five years in teaching/research.

Desirable

(a) Doctor's Degree.
(b) Published research work.
(c) Experience in guidance of research
(d) Teaching experience in an institution of University level.

Readers

Qualifications : Essential

(a) Diploma/Degree in Fine/Applied Arts.

(b) 10 years experience of teaching/research/professional in appropriate field with at least 2 years in teaching/research.

Desirable

(a) Post-graduate Degree.
(b) Published/exhibited work in Art.

Lecturers

Qualifications : Essential

(a) A Master's Degree with good academic record.

(b) 2 years professional experience.

Qualifications for Science and Humanities and Social Sciences Departments

Professor

Qualifications : Essential

(a) A Doctor's degree and published research work of high standard.

(b) Experience in guidance or research.

(c) 12 years experience of teaching and research.

Desirable

Teaching experience in an institution of University level.

Readers

Qualifications : Essential

(a) A Doctor's degree or published work of an equally high standard.

(b) Good academic record with a Master's degree or an equivalent qualifications.

(c) 7 years experience of teaching and research.

Desirable

(a) Published research work.

(b) Experience in an institution of University level.

Lecturers

Qualifications : Essential

(a) A Doctor's degree or published work of an equally high standard.

(b) Consistently good academic record with 1st or High IInd Class (B+) Master's Degree or an equivalent qualification.

Lecturers (English/French/Hindi)

Qualifications : Essential

(a) Master's Degree in English/French/Hindi.

(b) Doctor's degree or published work of high standard.

(c) Consistently good academic record with 1st Class or High 2nd Class (B+) Master's degree or equivalent.

*(d) Adequate knowledge of English preferably with English as one of the subjects at degree level.

*(e) Ability to teach through medium of English, if required.

Desirable

Teaching experience in an institution of University level.

*For Lecturer in Hindi.

NOTE

1. These qualifications will not apply to deputationists whose suitability for the post will be judged on the basis of the experience and accomplishments.

2. Time spent in pursuing the Master's Degree courses in Engineering/Architecture and towards Doctor's Degree in all cases, will count towards the experience requirements.

3. (i) Number of posts shown above may change at the time of selection.

(ii) Candidates, lacking in required experience, for any particular post may be considered for appointment against a post in next lower scale of pay.

(iii) Other things being equal, preference will be given to Scheduled Castes/Tribes candidates from amongst the external candidates.

(iv) Single rail/bus fare both ways payable to the candidates in India for journey over 175 kms each way by shortest available route.

(v) Overseas applicants will be considered "IN ABSENTIA". Persons abroad may appear for interview in person if they should inform the Registrar accordingly at the time of sending applications.

O. N. Chaturvedi
REGISTRAR

UNIVERSITY OF RAJASTHAN
JAIPUR

ANNOUNCEMENT FOR AWARD OF TEACHER FELLOWSHIPS UNDER FACULTY IMPROVEMENT PROGRAMME OF THE U.G.C.

The U.G.C. has announced the availability of 10 teacher fellowships at any given time, as a part of its Faculty Improvement programme pertaining to College teachers. These fellowships are specifically meant to provide opportunities to teachers to work for M.Phil or Ph.D. degrees.

The University will consider applications of teachers under the aforesaid Scheme in the following departments in the broad area indicated against each subject :

1. Physics (M.Phil/Ph.D)

Mosabauer effect : X-rays; Microwaves; Position Annihilation; Plasma Physics Solid State Physics; Transport Phenomena in disperse media; Particil Physics; Thin films.

2. Chemistry (M.Phil/Ph.D.)

Organo-metallic Chemistry; Natural Products; Electroanalytical Chemistry; Kinetics, Coordination Chemistry.

3. Mathematics (M.Phil/Ph.D)

Fluid Mechanics; Ballistics; Operational Research; Operational Calculus; Global Analysis; Mechanics on Manifolds and Astronomy.

4. Botany (M.Phil/Ph.D.)

Mycology and Soil Microbiology; Plant Pathology; Seed Pathology; Nematology and Myco-plasma; Growth. Physiology and Morphogenesis of tissues in tissue culture and drugs from medicinal plants in vivo and in vitro tissue cultures, Plant Taxonomy and Plant Ecology; Bryology; Anatomy; Morphology; Embryology and Seed Anatomy of flowering plants.

5. Geology (M.Phil/Ph.D.)

Mineralogy; Petrology; Structural Geology; Ore Geology and Micropalaeontology.

6. Zoology (M.Phil./Ph.D.)

Reproduction Physiology; Cell Biology; Toxicology; Entomology; Fish Biology; Developmental Biology: Endocrinology; Radiation Biology.

7. Philosophy (M.Phil/Ph.D.)

Logic, Indian Philosophy, Epistemology; Ethics, Social and Political Philosophy; Legal Philosophy, Philosophy of Science.

8. English (M.Phil/Ph.D.)

Neo-classical Lite;ature 1660-1800; Modern British Fiction; Modern Drama (English & American), Modern Critical Theory; Elizabethan & Jacobean Drama; Modern American Fiction. Commonwealth & Indo-Anglian Literature English language Teaching and Linguistics.

9. History (M.Phil/Ph.D.)

Art & Architecture : Paleography, Epigraphy and Numismatics, Education and Literature; Social Ideas and Institutions; Political Ideas and Institutions; Economic Ideas and Institutions, Scientific and Technological Development; Historical Geography; Legal Ideas and Institutions, Religion and Philosophy and Rajasthan History and Culture : (a) Ancient; (b) Medieval and (c) Modern Periods.

10. Political Science (M.Phil/Ph.D.)

Political Theory and Analysis, politics of Developing Countries with Special reference to South Asia and West Asia; Indian Government and Politics; Modern Indian Political Thought; International Politics and Public Administration, Foreign Policy of India,

11. Economics (M.Phil/Ph. D.) :

Economic Theory; Public Finance: International Economics; Economic Growth and Economic Planning; Agricultural Economics and Coperation; Banking; Industrial Economics; Labour Economics.

12. Commerce (M.Phil/Ph.D.)

Management Accountancy; Cos Accountancy; Financial Accountancy Taxation and Auditing; Personnel Marketing; Finance; Management o Public Enterprises; Social Responsibility of Business; Industrial Entrepreneurship, Cooperative Management, Economic Administration in India; Administration of Public Enterprises; Financial Management; Public Finance; Monetary Policy; Indian and International Banking, Development Banking; International Trade and Foreign Exchange; Industrial & Developmental Economics; Transport Management, Cooperation & Agricultural Organisation.

Applications are invited for the award of Teacher fellowships under the FIP of the UGC to work for M.Phil/Ph.D. degrees. The prescribed form is available with the Heads of the Departments concerned. Forms complete in all respect, should reach the *undersigned* on or before Saturday the **30th August, 1980**. The applications received after this date will not be entertained. The teachers working in colleges may send their applications through proper channel.

REGISTRAR

Additions to AIU Library

(*Continued from page 455*)

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Parsons, Talcott and Platt, Gerald M. *American University.* Massachusetts, Harvard University Press (c 1973) xi, 463p.

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——————————. *Examination reforms : Reorientation.* Mysore, Author, 1977, 9p.

——————————. *Question bank on examination reforms.* Mysore, Author, 1977. ii, 36p.

GAUHATI UNIVERSITY
GAUHATI-781014
Advertisement No. 10 of 1980

Applications are invited for the following posts :

1. **Professor of Library Science**—One post (5th Plan).
2. **Reader in Physics**—One post (permanent)
   Specialisation
   X-Ray Crystalography.
3. **Reader/S.S.O. (for Mechanical Section)**—One post (5th Plan).
4. **Reader/S.S.O. (for Electronics Section)**—One post (5th Plan).
5. **Lecturer in Library Science**—One post (permanent)

Scale of Pay

Professor—Rs. 1500-60-1800-100-2000-125/2-2500/-
Reader—Rs. 1200-50-1300-60-1900/-
S.S.O.—Rs. 1100-50-1600/-
Lecturer—Rs. 700-40-1100-50-1600/-.

All posts carry usual allowances admissible under the University rules in force from time to time.

In case where specialisation has not been mentioned against a post candidates should state their areas of specialisation at the Master's and Doctor's degree levels.

Qualifications: Essential

Professor An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader: Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that atleast three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Reader: (for Mechanical section): At least Second Class M.E. or M.Tech. degree in Mechanical Engineering or equivalent degree with 5 years' experience in R and D of instruments, or in operation, repair and maintenance of modern instruments, and with 5 years of teaching experience in the subject.

OR

S.S.O. (for Mechanical section): At least Second Class M.E. or M.Tech. degree in Mechanical Engineering or equivalent degree with 5 years of experience in R and D of instruments or in operation, repair and maintenance of modern instruments.

Reader (for Electronics section): At least Second Class M.E. or M.Tech in Electronics (or equivalent degree) with 5 years' experience in R and D of instruments or in operation, repair and maintenance of modern instruments and with 5 years' teaching experience in the subject.

OR

S.S.O. (for Electronics section): At least Second Class M.E. or M.Tech. in Electronics (or equivalent degree) with 5 years experience in R and D of instruments or in operation, repair and maintenance of modern instruments.

NOTE: In case of internal candidates with significant contributions in repair and maintenance and modern instruments, the above qualifications may be relaxed.

Lecturer: (a) A Doctor's degree or research work of an equally high standard, and (b) consistently good academic record with 1st or high second class (B) in the seven point scale. Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing inter-disciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experlence in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Candidates for being eligible for requirement to the posts of Lecturers must have a 1st or high Second Class (B in the seven point scale at the Master's level and for determining consistently good record, average of 50%-55% may be expected at the two examinations prior to the Master's examination.

Applications in plain paper in quadruplicate giving full bio-data including (1) Name in full (in block letters), (2) Father's name, (3) Date of birth by the Christian era, (4) (a) Permanent residence and address (in full), (b) Present address (in full), (5) Present occupation if any and name of employer, (6) Present salary drawn (if any) (7) Detailed academic career with mark-sheets and subjects studied (including Honours) in degree and post-graduate courses from Matriculation/Higher Secondary/High School Leaving Certificate Examination onwards and copies/reprints of research contributions, (8) Name and address of two referees not related to candidate together with an application fee of Rs. 10 (ten) (Rs. 7.50 in case of Scheduled caste/Scheduled tribe candidates) by CROSSED INDIAN POSTAL ORDER drawn in favour of the Registrar, Gauhati. University payable at the Gauhati-781014 post office should be sent in an inner sealed cover superscribed application for the post of (Name of post applied for) Advt. No. 10 of 1980 enclosed in an outer cover addressed to the Registrar, Gauhati University, Gauhati-781014 to reach him not later than **25th August, 1980**.

The number of this advertisement and name of the post applied for must be referred to in the application.

Persons in employment should apply through proper channel or with a no objection certificate from the present employer.

The University has accepted the principle of reservation of posts for Scheduled tribe and Scheduled caste candidates according to the norms of the State Govt. Candidates should submit necessary certificate from the Deputy Commissioner/District Magistrate if they belong to Scheduled Caste or Scheduled Tribe.

Candidates will be required to appear at an interview if and when called for.

Canvassing directly or indirectly will be a disqualification.

M.C. Bhuyan
REGISTRAR

OSMANIA UNIVERSITY
HYDERABAD-500007, A.P.
Advertisement No. 10/80

Applications in the prescribed form together with the registration fee of Rs. 5/- through M.O./I.P.O./Challan 'A' are invited for the following posts at the Kothagudem School of Mines, Kothagudem in the University service, so as to reach the undersigned on or before **1st September, 1980**.

1. **Lecturers in Mining Engineering**—Two posts
2. **Lecturer in Civil Engineering**—One post
3. **Lecturer in Mechanical Engineering**—One post.

Qualifications

A first class Master's Degree with consistently good academic record.

Scale of Pay

Rs. 700-40-1100-50-1600.

Age

Not above (35) years.

NOTE

(i) Age limit does not apply to the employees of this University.
(ii) Relaxation in age to the extent of five years shall be granted to the candidates belonging to SCs/STs/BCs.
(iii) Relaxation in age shall be considered in deserving cases.

14%, 4% and 25% reservations are made for SCs/STs and PCs respectively.

Application forms can be had from the Director, Department of Publications and University Press, O.U., Hyderabad-7, A.P. on payment of Rs. 2.25 in person or by money order or by a postal order UNCROSSED made payable to the Director and by sending a self-addressed envelope (11-1/2 x 26-1/2 cms.) duly stamped for ordinary or registered post.

A latest passport size photograph should be attached to the application form. No original certificates should be attached to the application form.

B. Ramchandra Reddy
REGISTRAR

BHAGALPUR UNIVERSITY

Applications are invited for the following post under the Bhagalpur University Service for the Research Service Centre so as to reach the undersigned on or before the **25th August, 1980**.

Chief Programmer
Scale of Pay

Rs. 1200-50-1300-60-1900.

Qualifications

1. First or high second class Master's degree in Computer Science/Statistics/Mathematics/Physics from any Indian/Foreign University/I.I.T.

OR

M. Tech. in Electronics/Mechanical Engineering.

2. Doctorate degree is any of the above subject.

3. Five years experience of Collection, Compilation, Interpretation and analysis of data of any recognised/registered institution and knowledge of any assembly language.

Asstt. Programmer
Scale of Pay

Rs. 500-25-750-EB-30-900.

Qualification

1. High second class Master's degree in Statistics/Mathematics from any recognised institution in India.
2. Three months' intensive training on any computer.

Desirable

1. Minimum three years experience of collection, compilation, interpretation and analysis of Statistical data of any recognised/registered institutions.

2. Knowledge of any assembly system.

3. Experience on Microcomputer will be preferred.

R.S. Singh
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

BOMBAY

Advertisement No. A/4/80

Applications are invited for the following posts in the Centre of Studies in Resources Engineering (CSRE), IIT—Bombay. The posts are tenable for a period of 5 years in the first instance but likely to continue. The staff appointed in the CSRE will be entitled to the same service benefits as are applicable to the permanent members of the staff of the Institute. Applicants should give an account of their professional record and list of research publications etc. In case of candidates of exceptional and proven ability, there may be flexibility regarding area of specialisation and formal educational qualifications. If a candidate is not found suitable for the post at (1) below, he may be considered for the position of Sr. Project Engineer/Scientist in the scale of Rs. 1500-60-1800-100-2000.

(1) CHIEF PROJECT ENGINEER/SCIENTIST REMOTE SENSING (6 posts)
Scale : Rs. 2000-125/2-2500

(2) PROJECT /ENGINEER/SCIENTIST REMOTE SENSING (5 posts)
Scale : Rs. 1100-1600

(3) ASSISTANT PROJECT ENGINEER/SCIENTIST REMOTE SENSING (6 posts)
Scale : Rs. 700-1300

Area of Specialisation and Qualifications

For the 6 posts of Chief Project Engineer/Scientist are given below at (a) to (f)

(a) **Application to Computer Image Data Analysis**

Ph.D. in Electrical Engineering or Computer Science, 12 years experience in computer image processing, remote sensing including Sensor Technology and development of data bank. Experience in the analysis of satellite data and use of CCTs will be considered additional qualification.

(b) **Application to Mineral Resources and Earth Science Problems**

Ph.D. in Earth Sciences/Geology/Geophysics. 12 years experience in using remote sensing, imagery and CCT interpretation using computer techniques including aerial photointerpretation.

(c) **Application to Water Resources Problems**

Ph.D. in Hydraulics or Water Resources. 12 years experience in Remote Sensing as applied to Water Resources Problems including Systems analysis.

(d) **Application to Geotechnical Engineering and Land Use Problems**

Ph.D. in Geotechnical Engineering. 12 years experience in the use of remote sensing, photointerpretation, computerised data processing and image analysis to problems in river valley projects, communication systems, coastal and urban developments.

(e) **Application to Photogrammetry and Geodesy**

Ph.D. in Photogrammetry and Geodesy. 12 years experience in the application of remote sensing, imagery analysis using computer in the field of Photogrammetry and Geodesy.

(f) **Incharge of Remote Sensing Application Training Programme**

Ph.D. in any of the fields mentioned above at (a) to (e). 15 years or more experience in application of remote sensing to various engineering and/or Science problems. Experience in teaching/research/development/training programmes necessary. The person has to develop training programme on the lines of the one organised in Water Resources Development Training Centre, Roorkee. He has to interact with agencies like ISRO, SAC, NRSA etc., for organising training programmes/workshops/conferences jointly with other organisations.

For the posts at (2) for the PROJECT ENGINEER / SCIENTIST, candidates having the Masters degree in the appropriate area of specialisation of engineering/science mentioned above at (a) to (c) and (e) with 5 years experience in the relevant area, may be considered. Candidates with a Master's degree in Metallurgical Engineering with 5 years experience in the area of Mineral Beneficiation will also be considered. Ph.D. is preferred.

For the posts at (3) for ASSISTANT PROJECT ENGINEER/SCIENTIST, candidates having the Master's degree in the appropriate area of specialisation mentioned above at (a) to (c) and (e) with atleast 3 years experience in the relevant areas may be considered. In addition, candidates having M.Sc. Mathematics and Statistics with 3 years experience in Digital image processing of remotely sensed data, and candidates having M.Sc. (Agri.) in Soil Sciences and Agricultural Chemistry with 3 years experience in application of remote sensing, imagery analysis using computer may also be considered.

The posts carry allowances such as DA, CCA, HRA as per the rules of the institute which at present correspond to those admissible to Central Government employees stationed in Bombay. Application should be made on a plain paper, neatly typed, and should reach the Registrar, IIT Powai, Bombay-400076, on or before [illegible] October 1980. Applicants should attach a crossed postal [illegible] Rs. 7.50 (Re. 1.88 for SC/ST can[illegible]) payable to the Registrar, IIT-B[illegible]

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29 SEP 1980
C.F.T.R.I., MYSORE

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH SEPTEMBER 1, 1980

DUSU ELECTIONS

Poster war at the Delhi University Students' Union elections held recently.

Courtesy : The Statesman

ASSOCIATION OF INDIAN UNIVERSITIES PUBLICATION

CLASSIFIED ADVERTISEMENTS

GARHWAL UNIVERSITY
SRINAGAR (GARHWAL)
Advertisement No. 8/80

WANTED

1. **Professor of Economics**—1 post (Grade : Rs. 1500-60-1800-100-2000-125-2500.
2. **Reader in Economics**—1 post (Grade : Rs. 1200-50-1300-60-1900).
3. **Reader in Zoology**—1 post (Specialization Physiology/Ecology) (Grade : Rs. 1200-50-1300-60-1900).
4. **Lecturer in Zoology**—2 posts (Specialization Fish/Entomology) (Grade : Rs. 700-40-1100-50-1600).
5. **Lecturer in Geology**—1 post (Specialization Sedimentology/Palaeontology) (Grade : Rs. 700-40-1100-50-1600).

Minimum Qualifications for Lecturers

(A) Doctorate degree or published work of high standard in the subject concerned, and;

(B) Consistently good academic record (i.e. the overall record of all assessments throughout the academic career) with First OR high Second class (i.e. with an aggregate of more than 54% marks) Master's Degree in the subject concerned, OR equivalent degree of a foreign University in such subject and should have either an average of 55% of first Degree examination and Intermediate examination or 50% marks in each of the two examinations separately.

2. Where the Selection Committee is of opinion that the research work of a candidate as evidenced either by his thesis or by his published work is of a very high standard, it may relax any of the requirements in the qualifications specified in (B) above.

For Professor

As per Lecturer, besides he must be eminent scholar in the subject and possess at least ten years experience of teaching P.G. classes and guiding research in the subject.

For Reader

As per Lecturer, besides he must have five years teaching experience of P.G. classes and guiding research in the subject.

All posts are temporary but likely to be made permanent and are transferable amongst three constituent colleges at Srinagar, Pauri and Tehri.

For all posts candidates having experience of working on local problems will be preferred.

Applications should reach the undersigned on or before **15 September 1980** Application forms can be had on request from the Office of the Registrar, Garhwal University, Srinagar (Garhwal) by enclosing a self addressed envelope of size 23 cm x 10 cm. with postage stamps worth Rs. 2.85 to cover registration charges.

Applications on prescribed form only, supported with a Bank Draft on State Bank of India, Srinagar (Garhwal) for Rs. 7.50 in favour of the Registrar, Garhwal University, Srinagar (Garhwal-246174) shall be entertained.

P.L. Chhabra
REGISTRAR

ANDHRA PRADESH AGRICULTURAL UNIVERSITY
ADMINISTRATIVE OFFICE
"RAJENDRANAGAR"
HYDERABAD-500030

Advertisement No. 8/80 Dated 8-8-1980

Applications are invited for the posts of :

1. **Associate Directors in the Faculty of Agriculture**—4 posts
2. **Senior Scientist (Cotton)**—1 post
3. **Senior Scientist (Pluses)**—1 post
4. **Professor of Agricultural Economics**—1 post.

Scale of pay for all the above posts: Rs. 1500-60-1800-100-2000-125/2-2500.

Application forms duly filled in should be sent with registration fee of Rs. 5/- so as to reach the Registrar, A.P. Agricultural University, Rajendranagar, Hyderabad-500030 on or before **30-9-1980.**

Qualifications for the posts of Associate Directors

Essential

(i) Ph.D. degree or any other equivalent degree in any discipline of the Faculty concerned.

(ii) Experience for a period of not less than ten years in teaching and/or research and/or extension in any discipline of the faculty concerned.

Desirable

(i) Other things being equal, preference shall be given to persons with a basic professional degree in the faculty concerned;

(ii) Published research work to credit.

Note

For one of the posts of Associate Directors Ph.D. degree in Agronomy is essential:

Qualifications for the posts of Senior Scientists & Professors :

Essential

(i) Ph.D. degree or any other equivalent degree in the subject concerned.

(ii) Experience for a period of not less than ten years in teaching and/or Research and/or Extension in the subject concerned.

Desirable

(i) Other things being equal, preference shall be given to persons with a basic professional degree in the Faculty concerned.

(ii) Published research work to credit.

Note: For the post of Professor of Agricultural Economics, "Specialisation in Farm Management and Production Economics" is required.

1. The University reserves the right not to fill up the advertised posts.
2. Applicants should appear for interview at their own cost.
3. Selected candidates are liable for transfer to any equivalent posts in teaching, research and extension in the University.
4. Selected candidates will be governed by Andhra Pradesh Agricultural University conditions of service of teachers and other employees.
5. Application forms can be had from the Registrar Andhra Pradesh Agricultural University, Administrative Office, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in cash or through postal order UNCROSSED.

T. Narayan Reddy
REGISTRAR

ANDHRA PRADESH AGRICULTURAL UNIVERSITY
ADMINISTRATIVE OFFICE :
"RAJENDRANAGAR"
HYDERABAD-500030.

Advertisement No. 7/80 Dt. 8-8-1980

Applications are invited for the post of :

DOCUMENTATION OFFICER

Scale of Pay : Rs. 700-40-1100-50-1600.

Applications forms duly filled in should be sent with Registration fee of Rs. 5/- so as to reach the Registrar, A.P. Agricultural University, Rajendranagar, Hyderabad-500030, on or before **30-9-1980**.

Qualifications

(i) First or Second class M.A./M.Sc. and first or higher second class M. Lib. Science.

(ii) **Experience** : Two years experience in a research Institute or University Library.

Note: Ph.D. degree in Library Science or any other subject may be taken as equivalent to two years experience.

1. The post is temporary till **30-11-1984** and is likely to continue.
2. The University reserves the right not to fill up the advertised post.
3. Applicants should appear for interview before the Selection Committee at their own cost.
4. Selected candidates are liable for transfer anywhere in Colleges or Research Stations under the University.
5. Selected candidates will be governed by Andhra Pradesh Agricultural University conditions of service of teachers and other employees.
6. Application forms can be had from the Registrar, A.P. Agricultural University, Administrative Office, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in cash or through postal order UNCROSSED.

T. Narayan Reddy
REGISTRAR

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Opinions expressed in the articles and reviews are individuals and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Semester System —An Appraisal

SEP 1980

S. Nagaratnam*

Changes in education have to be a continuing process to meet the needs of a changing society. The objectives of education, especially higher education, have undergone a radical change with the advent of industrialisation throughout the world. Education has to train the required manpower in many fields for an industrial society. It has become a part of the industrial process. Consequently, efficiency in terms of needed quality and quantity is anticipated.

Practically all the universities in the country have adopted the semester system during the last two decades. This implies the division of an academic year into two portions, each of about 18 weeks duration so that the subjects could be covered in an integrated way during each of the portions as was done previously during a full year. Along with this division of work the much-needed examination reform with continuous evaluation in the form of internal assessment was also introduced. Thus not only there is the division of the year into two or more self contained instructional periods, but an in-built evaluation process through internal assessment. It is the latter reform that has caused the abandoning of the semester system recently in some of the universities. However, the reorganisation of courses and contents adopted with the semester system has not caused any administrative or academic problems.

Any radical reform should not be forced down the throat from the top of the hierarchy in the universities to be adopted by teachers. The process should be initiated at the student-teacher level , debated and discussed and moved up the hierarchy to be ultimately adopted as a programme to be followed. This process might seem slow but such a democratic process helps towards adoption of a new system into the existing set up with success. Many pitfalls in a well intentioned reform could have been avoided with wider acceptance before implementation.

The external examination system ensures uniformity, anonymity and impartiality and has fewer administrative problems. But, as rightly criticised, the separation of teaching from evaluation robs the teacher of the challenge and joy of teaching, deprives him of the opportunity for a midcourse correction, innovation and creative teaching. Undue emphasis on a single examination at the end creates malpractices and leads to an ultimate lowering of standards. There could be no two opinions on the advantages of internal assessment.

But in the Indian context some section of teachers, and most of the students, do not prefer internal assessment. Complete internal assessment increases the workload of the teachers and they have to take greater responsibility as they are accountable for their wards. Fears about angry or violent responses from students make teachers reluctant to go the whole hog with internal assessment especially in arts colleges. This has compelled some of the universities either to water down the importance of internal assessment or abandon it totally.

Semesterisation including total internal assessment has not been successful in this country. There is the need therefore to develop local models keeping in view local resources, traditions and objectives. The objectives of the new system should be to induce improved study habits among the students, to provide greater autonomy for

(Continued on page 477)

**Prof. of Civil Engg., Regional Engg. College, Tiruchi.*

Higher Education and the University

Samuel Mathai*

There has been a great deal of interest in recent years in higher education in India, and books and articles have been written without a critical, historical knowledge of the origins and development of modern university education. It may therefore be of interest to take a historical survey of the beginnings of the modern European University and the establishment of western type of universities in India.

The concept of 'Higher Education' as something distinct from primary and secondary education is comparatively recent. In some places the term 'tertiary education' is used, indicating that it is the third stage of education, following the primary and the secondary stages. Almost everywhere in the world to-day formal education is organised in these three stages, although their precise limits may vary from country to country. There are also refinements of the system: there may be arrangements for 'pre-school' education (nursery schools, kindergarten, etc.): the primary stage may be divided into lower primary and upper primary; the secondary stage may be divided into middle school and high school, or lower secondary and higher secondary. It is usual now to plan educational arrangements with reference to age groups: thus in India the primary stage is supposed to be from the age of six to eleven, and the secondary (according to whether the school system is one of ten years, eleven years or twelve years) covers the age group of eleven to sixteen or seventeen or eighteen. But nowhere in India are these groupings strictly adhered to, and there are cases of students who complete secondary education (in a ten year school system) at the age of thirteen or fourteen. Generally speaking it may be said that higher education begins at the end of high school or secondary education; and for entry into higher education a school leaving certificate (on the results of a public examination) is usually required. In most parts of the civilized world a student is at least sixteen years old when he completes high school in the United States he is usually over seventeen; in the United Kingdom and many of the commonwealth countries he is eighteen; and in some European countries where the first University degree is a doctorate, he may be nineteen, or more.

Although there is an apparent similarity in the division of the educational 'ladder' into three broad stages in most parts of the world, the content and level of education varies from country to country. This is due not only to the age at which the average student is expected to complete each stage, but also to sociological, economic and political factors that effect education. Thus a student who completes his secondary education from a High School in India is ordinarily not only younger than a student passing out of a High School in England or America, or from a *Lycee* in France or a *Gymnasium* in Germany, but also is intellectually less mature. If 'higher education' is what is attempted and achieved at a university (or college) by way of teaching and learning, obviously university standards will vary from country to country though there might be close resemblances in form and structure of the curriculum and in organisational pattern.

In spite of great differences that exist in the idea of the university in different parts of the world, the name—French *universite'* German *universitat* Italian *universita*, Spanish *universidad*—is now more or less universal: names like *visvavidyalaya* (Hindi) and *sarvakalasala* (Malayalam) are translations of the word 'University'. The beginnings of the European university (which in its British, French or German version has provided the model for universities everywhere in the modern world) go back to the 10th or 11th century. The earliest known establishments of the kind that came to be known as universities were in Italy (at Salerno, Bologna, Padua and other centres). It appears that the first stage in the development of these institutions was when the Chancellor of a Cathedral (or some other authority) gave permission to teachers to open schools outside the cathedral school. Then a *license* to teach—which was granted only after a formal examination—authorised a master (Latin: *magister*) to teach at any centre of education. Later still, a license from the Pope or the Emperor or a King was necessary to establish a community of scholars. The term first used for such a community of scholars was *studium* or *studium generale*. The latter term was applied to the larger or more distinguished *studia—i.e.* places resorted to by scholars from all parts, like those at Paris or Oxford. The word *universitas* originally meant only a society or guild or something like a union (in the modern sense) within the *studium*. There could be more than one 'university' or 'society' in a *studium* and the *universitas* could be one of 'masters' or of 'scholars' or of both—*universitas magistrorum or universitas scholarium* or *universitas magistrorum et scholarium*. In course of time the word began to be used by itself in the exclusive and specialised sense of a community of teachers and scholars whose corporate existence had been recognised and sanctioned by civil or ecclesiastical authority.

By the end of the 15th century there were some seventy universities in Europe. From Italy they had grdually spread to France, England, Germany, Scotland, Scandinavia, Spain and Central Europe. Already these universities had acquired distinct characteristics influenced by the political and social situation of the country or region in which they were established. But there was a recognizable similarity among them, even when some of them (as in

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**Former Vice-Chancellor of Kerala University.*

Spain) were founded by kings and not by the Pope. This was because recognition *as studia generalia* depended on the license granted by the institution being accepted as the 'right to teach anywhere.' It was the Pope who granted such a generally recognised right—the *jus ubique docendi.*

New forces came into play with the Reformation and the Counter-Reformation, and the rise of nationalism in Europe. With the decay of Latin as the common language of culture and learning, the universities became increasingly national. The mediaeval 'universality' was largely lost. But with the growth of science in the 19th century there was a revival of contact among the universities. The spread of the university of America, to the countries of the British empire and to other countries that imported European ideas or came under European influence (Japan, China) necessitated new adaptations of the original university 'idea.' But although patterns vary a good deal there is a 'family resemblance' among all of them.

Although in the course of the centuries the university has undergone much adaptation and innovation, and the aims and purposes of different kinds of universities vary considerably the university everywhere in the world has now become the chief agency of higher education and professional training. A university degree or diploma is the symbol of superior education and a required qualification for many forms of employment. This is a fact that links all the universities and is a common inheritance from the first mediaeval European university. It will be recalled that the beginnings of the university included the granting of a licence to teach. The original 'degree' of the university is that of Master of Arts (which in French is *licencie-es-letters*). 'Master' and 'Doctor' both meant teacher, and the Master's degree and the doctorate were considered equivalent. But from the 19th century a rationalisation of the various 'grades' of university education took place. In the English-speaking countries a first degree of Bachelor of Arts was granted, and the Master's degree was granted some years later either after an examination or by efflux of time. Doctorate degrees were given in law, medicine, divinity and other 'professional' courses. In Germany, however, after the reorganisation of the universities and schools (after the defeat in the battle of Jena, 1806, and the treaty of Tilsit, 1807) following the philosopher Fichte's ardent appeal—'If Germany is to be saved, the national must be taken as the unit of social organisation. Germany must realize its character and destiny, and through a conscious control of education it must liberate all its potentialities—moral, intellectual, physical, vocational—for national service', he declared—the doctorate degree became the hall mark of higher education, whether at a university or at a Technische Hochschule (Technical College or University). The German system greatly influenced American educational practice in the 19th century, and although the B.A. and M.A. degrees were still awarded, the Ph.D. degree became the ultimate degree. It was not till 1917 that Oxford instituted the Ph.D. (D. Phil) degree, mainly to accommodate American students who could no longer travel to Germany because of the War.

It could thus be said that the common distinguishing mark of universities is their power to grant degree. Degrees may be awarded on the basis of a test—which may be in the form of a written examination or an oral (*viva voce*) examination or a dissertation or thesis embodying the results of special study and research—or *honoris causa* that is, for distinction in some field of public activity or eminence in academic, scientific, or cultural fields. The power to grant degrees is by convention or law the exclusive privilege of universities or other institutions recognised as equivalent to universities. In India, the University Grants Commission Act of 1956 has expressly laid down that a degree (which is defined as one of the degrees listed by the Commission) may be awarded only by a university or by an institution deemed to be a University or empowered by an Act of Parliament for such a purpose.

A university, then, is a corporation of teachers and students which is empowered by some competent authority to provide facilities for teaching and learning, to conduct tests to determine the award of degrees, and to grant academic degrees. When the first universities began in Europe there was only a minimal organisation of the life of the community of teachers and students. Since the university was a development from the Christian Church in Europe its first members were *clerici* (modern 'clergy': from which the word 'clerk', in the sense of 'scholar' is derived) who had certain privileges and immunities. The head of a university was a chancellor (a word borrowed from the Roman law courts) who was a bishop or acted in the bishop's name, and had general charge of the teaching, exercised control over members of the university, and conferred degrees. Later, even when the office of chancellor existed, a Rector was appointed as the real head, and the chancellor's office became largely formal.

The early *studia* were 'local' institutions and the student body, even when they were lay (not clergy) made their own residential and feeding arrangements. But as some of the *studia* became famous and students and teachers from distant places came to these centres of learning, and as their numbers increased, student guilds were formed to enable students from different places of origin (*e.g.*, France, England, Spain, Italy) to secure by combination certain rights and privileges that they could not obtain as citizens. These *societates scholarium* were the first 'universities' within the *studia generalia* and were also known as 'nations'. The term 'university' had no implication of 'universality' of learning. When the word was adopted as the name for the *studium generale*, the only possible suggestion of 'universality' was a geographical one. Indian 'translations' of the word—*visvavidyalaya, sarvakalasala*—are based on a misconstruction of the origin of the word. But it is now generally thought that a university properly so called should have a wide range of academic facilities.

It appears that quite early in the history of the universities, in places like Bologna, the masters formed themselves into organizations called *collegia* chiefly for the conferment of degrees. This is the origin of the word college. The students who went to Bologna were of mature years, and were mostly men already holding some office in church or state. Private houses for residence of students existed from the beginning, but later a house for the more needy students (*a domus*) with a fund for their maintenance was founded. Colleges as units of a university or as single institutions of higher education in later times derive from both such teachers' organisations and residential arrangements for students. In Paris, Oxford and Cambridge scholars found it safer and more convenient to rent a house in which several of them could live together than to live in separate apartments. These 'houses of scholars' were sometimes gifts of rich benefactors or monastic foundations. Gradually these student 'hostels' became colleges. Thus Merton College in Oxford was founded by Walter de Merton, Chancellor of England and Bishop of Rochester as the 'House of Scholars of Merton' in 1264. The 'collegiate system' of British and Commonwealth universities has grown out of such early foundations.

As universities were established in other parts of the world the term 'college' was applied to institutions which provided teaching at the undergraduate level, and either granted their own B.A. degree or the degree of the university of which they were affiliated. Higher Education in the British empire and the Commonwealth developed by a process of university colleges being first set up and these colleges being later converted into universities. In India a few colleges were established by the East India Company before the first universities were created in 1857; a number of private institutions also had been set up before that date. Clear demarcations between what we now call secondary education and higher education had not been made: the universities were therefore conceived as regulating and examining bodies, and the colleges were expected to prepare students for the examinations of the university through a two or three year period of teaching. The first college established in the United States was Harvard College (1636). This has now become Harvard University. A number of other colleges (including the 'Land Grant Colleges') were established in that country since then, and most of these have become universities. But in America the name 'college' does not mean an affiliated institution: a college can have the same scope and functions as a university, and grant its own degrees. But usually, though not necessarily, a college is a four-year undergraduate institution of higher education which admits students from secondary schools and which grants a bachelor's degree. Such a college usually emphasizes a liberal or general education rather than specialised technical or vocational education. A college could also be a separate degree granting professional institution or a constituent professional department of a university, *e.g.* medical colleges, agricultural colleges, teacher-training colleges, law colleges, engineerin colleges, etc. Sometimes the term college is use for student residence halls: at Oxford and Cambridg the colleges are primarily residential houses fo students with a few 'fellows' and a principal or wa den or master at the head.

When modern university education bega in India (in 1857, with the establishment of the un versities of Calcutta, Bombay and Madras) ther were a few institutions, established a few years earlie that were called colleges. Among these were: Sanskrit college at Benares, founded in 1792 b Jonathan Grant; Hindu College, Calcutta, 181 (which was the first 'English' college in India) established on the initiative of Raja Ram Mohan Ro and others; a medical college in Calcutta; Elphinstone College, Bombay. But the term colleg did not have a specific meaning, as an educationa system with clearly marked stages had not yet com into existence. But with the establishment of th universities a number of 'English' schools that wer already in existence began to prepare older student for the examinations of the universities, and man of these schools were soon affiliated to the universities as colleges. There are nearly five thousan colleges (Arts, Science, Commerce, Engineering Medicine, Teacher Training, Law, Agriculture) i India to-day; and the term college now indicate that the institution provides education or trainin leading to university degrees. But a few secondar schools of the 'public school' type (like Mayo College, Ajmer; Rajkumar College, Rajkot) were als called colleges.

The affiliated college in India (whether a 'government' college or a 'private' college) is more or less autonomous as far as its internal administration is concerned but has no freedom to devise its own curriculum and set its own standards. This is historically the consequence of the Indian universitie having started as purely examining bodies and the colleges originally functioning as institutions 'coaching' students for the examinations of the universities. But some of the 'better' colleges took their function as *educational*, as distinct from merely *teaching* bodie seriously and provided character training and intellectual stimulus of a higher order. The rapid growth in the number of colleges in the last fifty years or so, and the effects of social, economic and political changes in the country, have adversely affected the quality of teaching and the general moral and cultural atmosphere of the colleges. Even the limited freedom and internal autonomy that the colleges formerly enjoyed have in practice been greatly attenuated. In the normal evolutionary process the colleges (or at least the older and more reputed ones) should have grown into independent, degree-granting institutions, but this has not happened.

Although a college is generally either a degree-giving institution or an institution providing education of university standard and related to a university, the term is also used for a large number of institutions (especially in the United States and in Japan) which provide post-secondary education n a variety of subjects for two or three years outide the university system. Such institutions are sually referred to as Junior Colleges. In America ome Junior Colleges have what are known as transfer courses', *i.e.*, courses that enable students hereafter to join a regular college or university. But generally speaking Junior Colleges provide training in vocational courses or in technical subjects.

Many of the polytechnics in India may be compared with some of the Junior Colleges in Japan hough the latter usually specialise in one subject or a group of closely related subjects (*e.g.*, photography, horticulture, fashion—which includes dress making and a certain amount of textile technology); whereas a polytechnic, as the name implies, provides training in three or four technical courses. Junior colleges and ploytechnics usually require that the candidates should have completed high school, and for that reason could be said to come within the scope of higher education. But they are not so designated.

The fact appears to be that for post-secondary education to become higher education properly so called it must be broad-based and must be more than just training for a job or an office. There is always an assumption that higher education should include some study of the humanities and a good acquaintance with the essentials of the cultural milieu in which that education is imparted and received. But this is an area of ambiguity. Although the beginning of the present century, or at least after the first world war, there has been a fairly clear articulation of the educational system in most countries of the world, and, as has been stated above, the division of the educational a ladder into primary, secondary and tertiary stages is widely recognised, there is still uncertainty about the dividing line between secondary and tertiary or higher education. In the four-year liberal arts colleges of America a variety of curricular experiments are tried, based on different views of the function of such an institution. In India it was felt quite early in the history of university education that there was need for an 'intermediate' course to link the high school courses with the degree courses. In some parts of the country the intermediate course was taken out of the purview of the university and put under Boards of Intermediate Education specially created for the purpose. From 1944, after the Sergent Committee had reported on post-war reorganisation of education in India, most universities abolished the Intermediate course and split the two years between the Secondary stage (calling it Higher Secondary) and the University (setting up a three-year degree course). This experiment has not been entirely satisfactory: in many places instead of the Higher Secondary a 'Pre-university course' was devised. More recently in Kerala the one-year PUC has been substituted with a two-year 'Pre-degree course'; this is now accepted as the normal pattern nationally.

For a variety of reasons (the low standards of Indian High Schools, the comparatively early age at which a student can matriculate, and sociological and other factors that militate against the raising of standards) the first degree stage in Indian universities rarely succeeds in being anything more than a continuation of High School both in terms of levels of knowledge and methods of teaching.

In the second half of the 19th century when higher education was carried to other parts of the world outside Europe, the university idea had to undergo many changes and adaptations to fit into the new situations and to meet new needs. At that time the European universities themselves were faced with new problems. There was the problems of bringing science within the scope of university studies. Ideas concerning the role of the university in training people to meet the needs of an industrial society, and the university as an institution that must be in the forefront of the advancement of knowledge through research, were being debated by leaders of the nations. In America in the 17th and 18th centuries many colleges and universities modelled on the English universities had been established : they were primarily concerned with a religious culture and the training of an elite. But the needs of a pioneering agricultural society required radically new forms of education. The Landgrant Colleges (many of which have now become full-fledged universities) were established to provide for the study of agricultural and veterinary sciences and to establish stations for carrying out research in these and related fields.

The problems of adaptation in a country of ancient civilization and a non-European culture were many and complex. In India there were several questions that needed to be considered. What was the 'purpose' of bringing a European institution into this country? The university in India had to help to revive the ancient learning of the land and at the same time make available to the people the new European science. It had to train the men who would work in the new professions that it would help to create—law, medicine, engineering, teaching, public administration. The university would at least indirectly be the channel of political ideas and be the means of establishing western political institutions in India. The university would help to create a modern, educated *elite* who would set the standards of a new national culture. Not all these purposes were clearly spelt out by the founders of the first universities in India, but a careful study of the documents relating to the discussion of the question of introducing 'English' education into India reveals that thoughts like these did occur to the Englishmen and Indians involved in the discussion.

During the last fifty years, and especially after the second world war, ideas about the tasks of education have undergone great change. The traditional views about the nature and purpose of the university still have validity, but the university has now to respond to pressures and demands that arise from the contemporary political, economic and sociological developments in the world; and the 'explosion of knowledge' and the growth of technology have begun to affect educational aims and methods.

A classic expression of the 'idea of the university' was given by Jawaharlal Nehru addressing the Allahabad University in 1947: "A university stands for humanism, for tolerance, for reason, for progress, for the adventure of ideas and for the search for truth. It stands for the onward march of the human race towards ever higher objectives. If the universities discharge their duty adequately, then it is well with the nation and the people ... A vast responsibility therefore rests on our universities and educational institutions and those who guide their destinies. They have to keep their lights burning and must not stray from the right path even when passion convulses the multitude and blinds many amongst those whose duty it is to set an example to others."

The University Education Commission (Radhakrishnan Commission) said: "We have now a wider conception of the duties and responsibilities of universities. They have to provide leadership in politics and administration, the professions, industry and commerce......They must enable the country to attain, in as short a time as possible, freedom from want, disease and ignorance by the application and development of science and technical knowledge."

The Education Commission (Kothari Commission) reporting in 1966 has the following statement about the tasks of universities :

"In board terms, the functions of universities in the modern world may be said to be:

—to seek and cultivate new knowledge, to engage vigorously and fearlessly in the pursuit of truth, and to interpret old knowledge and beliefs in the light of new needs and discoveries;

—to provide the right kind of leadership in all walks of life, to identify gifted youth and help them to develop their potential to the full by cultivating physical fitness, developing the powers of the mind and cultivating right interests, attitudes and moral and intellectual values;

—to provide society with competent men and women trained in agriculture, arts, medicine, science and technology and various other professions, who will also be cultivated individuals, imbued with a sense of social purpose ;

—to strive to promote equality and social justice and to reduce social and cultural differences through diffusion of education; and

—to foster in the teachers and students and through them in society generally, the attitudes and values needed for developing the 'good life' in individuals and society".

A Committee appointed by the University Grants Commission to report on "Standards of University Education" (1965) said in its report that in addition to two aims "applicable to all universities in the world", *viz* "the transmission of existing knowledge to new generations" and "the advancement of the frontiers of knowledge by research", the Indian university should have among its objectives the following:

—ensuring that 'every student who passes out of an Indian university takes with him some understanding of India's cultural heritage, its past achievements and triumphs'....

—developing 'a critical approach to the values and schools of thought which have come down to us...'

—making 'an intensive study of problems that beset its neighbourhood for the purpose of finding practical remedies for them....'

—exercising' a wholesome influence on the thinking and planning activities of Government and other agencies....'

—"the development of a national outlook overriding parochial, religious and linguistic considerations..."

—'to be internationally minded' bearing in mind that 'in the pursuit of truth and excellence to which all universities are committed, there is neither east nor west, north nor south'.

The traditional view of the function of a university as found in the older English universities was that it should produce persons with a high sense of duty and reasonableness, who would be able "to fill any post with credit, and to master any subject with facility". The duty of a university is instruction rather than research, and to train the mind rather than to diffuse useful knowledge. This was in contrast with the direction that German universities had taken. The German influence did not manifest itself in England till much laster; but it affected the development of higher education in America and other countries. There was a great proliferation of 'subjects' of study. New areas of knowledge like anthropology economics, sociology, political science and psychology developed; science itself branched into a number of 'disciplines.' Technical education, which in the past had been only the learning of a 'trade' now grew into engineering and technology and applied science. The range of higher education now includes the humanities, the social sciences, the biological sciences, the physical sciences, astronomy and outer space.

In developing countries like India the problems of higher education now include keeping pace with the advanced countries in this great leap forward of knowledge and the rapid changes in methods and techniques of learning and investigation. Research in most areas now requires the support of an advanced technology. The higher reaches of learning need to be based on sound foundations of intellectual and scientific training at the undergraduate level.

If we use an architectural metaphor, higher education is a three-storey edifice, the ground floor is the undergraduate stage; the second storey is the postgraduate stage and the top storey is where advanced learning and research and real 'search for truth' are pursued. The ground floor is open to large numbers, and the many who enter will come with different motives and varied capacities. They will all have opportunities for acquiring a broad-based education, and to learn to think clearly and logically and to develop respect for truth. But not all of them will go on to the next stage : 'many are

(*Continued on page 483*)

Role of Libraries in a Developing Society

Kalpana Dasgupta*

Libraries and Librarians have come a long way since the days of chained books and closed stacks. We are in an era of scientific development at its peak and a consequent information explosion. This resulted in developing countries being more effective in performing basic activities of locating, acquiring, organising and disseminating available information. This is also due to wide ranging technical development in every field of activity and an overall consciousness about the utility of information for development.

The situation in developing countries in general and in India in particular is nowhere near this because like any other field of activity there is a lack of technological development, in sufficient funds and traditional attitudes which resist any change. Today's needs, therefore, would be to involve the people and make them aware of the developments around and thereby make the changes in a developing society. Knowledge of information will have to be shared effectively through various channels of communication and libraries and librarians will have to play a vital role in doing so.

Information needs

The contribution of information to development cannot be doubted any longer but its quantification is extremely difficult in different developing societies. Every developing society has its priorities and, therefore, it is even more difficult to define the optimum levels of resources which should be devoted to the information input at local, regional or national level. Developing countries require information systems of their own which suit their needs and capacities. The emphasis should be on knowledge most needed for social and economic development.

Access to precise and reliable information of different types at the right time, to the right person in a conveniently usable form minimises the wastage of resources. And also the well organised information system helps people at various levels :

—to stimulate thought and action by injection of and interaction with, other people's ideas, knowledge, experience and achievements;

—to promote continuous awareness of what others are doing so that individual workers (or groups) may know of developments in their own special fields, and in wider fields such as discipline, or technology;

—to diminish the probability of unwitting duplication of work and to save time and effort;

—to provide introductory and background information for work in unfamiliar fields;

—to provide specific information and data needed for work in hand; and

—to meet specific requirements (from "Handbook for information systems and services" by Pauline Atherton).

It is the communication agents who have set the wheels of change into motion. The developing countries have had long traditions of oral culture which had to give in gradually to organised media systems of communication because of user increase, distance and increase in output of knowledge.

Communication of information should embrace all relevant means of communication including non-documentary forms such as—oral, documentary (printed and cyclostyled), audio-visual (exhibitions, films, radio and television) media and traditional media.

The different channels vary in effectiveness and in the range of audience reached e.g. oral communication (face-to-face) may be most effective in a small audience or in a cultural group audience situation. Whereas in communication through electronic and other such media the message can reach more effectively to the far away audiences.

Libraries in communication process

Libraries or organised collections of information exist to serve as an access point. They facilitate the use of information that represents recorded knowledge for the purpose of learning. The library often has to take the role of a teacher. The concept of libraries as "Knowledge Resource Centre" is fast coming up in the developed countries. With the application of the new media technologies, it is possible to give all types of information to the user. There are mechanisms which can identify what information is wanted or needed, what information in what forms will be most useful for using and reproducing. They can also determine how the user can interact with the information. New methods of storing and organising information can be created to suit the needs of the user.

Today when we speak the 'book' we are more or less using the generic idea of the book. Likewise when we make the reference to the user of information in libraries, it has a broader meaning. Because the user may not just get information from one unit of the library, but one unit may interact with another unit to find a solution to a problem. Besides providing stored information, the library may also serve as a communication facilitator by taking the information from the original form and delivering it in the manner which facilitates use.

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Expansion of the communication spectrum in libraries from print to audio-visual and other means of communication will certainly bring about changes in library services and also the impact of libraries as transmitters of information through different channels of communication.

The variety of media, other than print which may be made available are motion pictures (films, video-tapes, video-discs), television, satellite telecommunication, audio-recording (phonograph discs, audio tape recording) and computers.

According to Wilbur Schramm, "It is predictable that the next stage in the technology of Mass Communication will be concerned with the needs of the receiver to help him separate out what he needs from the flow of information, call or recall it for use when he needs it, and establish special channels to and from other users with whom he needs to share."

Educators at different levels

When we are in doubt whether the library and the librarian are parts of the overall communication process or not, this view should give us a lead that libraries have to play a vital role in the entire communication process of the developing society.

In fulfilling the task of involving the people at different levels in economic and social change, libraries have to change their traditional role as store houses of books and other reading material. At all stages of economic and cultural construction the Soviet library has actively participated in the solution of the main tasks that the country faced: wiping out illiteracy, raising the level of professional knowledge of the workers, peasantry, etc. Therefore, it is possible for the librarian to be actively involved at different levels of development. They can play a vital role in educating, informing, and in entertaining the people. While in a developed society people are informed and alert, in a developing society due to various historical, political, economic and social reasons the majority are not well informed even about the solutions to their immediate problems. Therefore, their participation in different development programmes cannot be automatic. They have to be drawn into and made to participate and get involved in different programmes for change. This may be done through dissemination of correct and current information.

In most of the developing societies literacy levels are very low. Therefore, document centred library services alone cannot be effective. The modern concept of information centre or resource centre will have to replace the idea of the traditional libraries because the services should be largely information centred—preparing, supplying and explaining information to literates, neo-literates and illiterates.

In the present Indian conditions if libraries have to prove their worth as locators, organisers and disseminators of information to the right persons, at the right time in the right form they should adapt to the changed set up. In India there are developmental programmes of various types and of different importance in the socio-economic spectrum of the country e.g. family planning, adult education, co-operative development, etc. For making all these programmes successful the right information should reach the users at different levels in the right form and at the right time. The main targets are :

1. The motivators (those who work in the field);

2. The receivers and utilisers of the programme.

Effective dissemination of information at both levels will depend largely on proper communication of worthwhile information. As mentioned earlier libraries will have to assume the proportion of a resource centre or an information centre.

In the present infrastructure the public library system and the state information centres together may prove quite workable if a combination of the two can be evolved. As per available statistics 15 states have state public libraries, and five union territories have central public libraries. There are 401 districts and libraries are 291 at the district level. There are 5,027 blocks, and out of them 1,798 have libraries, out of 5,75,936 villages only 41,828 have a library each. Coming to government information centres, each state has a chain of information centres at the state and district levels as well as at sub-division levels. Many of them also have a central Reference Library with books, clipping section, indexing facilities and an audio-visual unit.

Is not there a way by which there may be proper co-ordination between these so that the resources can be shared and used for these two types of clientele at all levels ?

Helping information flow

It is at this juncture that the librarian should play an active role. Librarians and information officers of the state central library and state information centre will have to co-ordinate the activities of the lower level units of both these organisations to have access to both externally and internally generated information. The librarians and information officers at different levels should be aware of the problems and need of the area in question, the composition and life style of the community that has to be served. This is necessary to build up the right information sources both documentary and non-documentary. There has to be good rapport between the librarian and information officer on the one side and the clientele on the other.

As mentioned earlier there will be mainly two types of clientele, the motivators and the people in general. The first category will have to be made aware of the latest developments in their particular field of activity. This could be done by librarians and information officers at their level. The externally generated information will flow from the state level downwards. This can be done by :

—Sending mimeographed information bulletins about externally generated information, specially of other areas of the country or abroad.

—Studies done by different organisations may be highlighted.

—Periodical newsletters containing experience of village/district/state levels in that particular area of activity.

—An up-to-date directory of personnel in the area handling the job. This will serve the purpose of good referral systems.

—Occasional meeting of the librarian and information officer with the motivators, extension workers and publicity officers.

The information flow here has to be two way because the librarian has to keep the workers aware of the last development and they in turn will keep the librarian aware of the internally generated information at their level. This information has to flow back upwards to the state level so that as awareness is created among the policy makers as to the effectiveness of the programme.

To cater for the information needs of the next category i.e. the possible beneficiaries of the programme, the librarian has to change further and assume the role of a communicator.

The following information has to be communicated :

1. Need for the programme.
2. Methods of utilising the programme.
3. Benefits of the programme.

The channels of communication could be :

(a) Interpersonal i.e. talking to people.

(b) Visuals—posters, photo, charts, slides, etc. The visuals should carry the message in a form which can be understood by all. The level of understanding of the people has to be taken into consideration. The placement of the visuals would be at the often visited places e.g. post office, market place, school, village panchayat, etc.

(c) Short films, television programmes;

(d) Fairs and exhibitions;

(e) Mailing simple awareness services to neo-literates. The thrill of getting something to read may prove effective communication.

In reaching the people directly specially at the village level the librarian has to be a co-worker of the publicity officer or extension worker. The panchayat house which is frequented by the people could be changed into a communication centre. With the television reaching many of our villages through the SITE this could be a centre of activities. Newspaper reading, radio listening, television watching could be organised along with the village level extension worker. Audio-visuals such as slides, need not be used only for entertainment but also for getting across information.

If all these sound utopian today it will not be so tomorrow. In the days to come in developing societies development programmes will continue with full impetus. All information disseminating organisations have to gear up themselves to the needs of the people at large. If librarians are to be of any use to the semiliterates and illiterates their role and activities should change. At all levels there should be an attitudinal change. We have to give up the elitist slant to education and try to reach the people at different levels. □

[*Courtesy* : *The Communicator*]

Semester System—An Appraisal

(*Continued from page 469*)

the teachers to plan the course work and train the students and to rescue the students from the tenuous results of one final examination.

Division of the academic year into two semesters with partial internal assessment along with an external examination at the end of each semester has been tried. Among the affiliated institutions, there has been a tendency to give disproportionately high marks in internal assessment to boost up the results, as the results are declared with the addition of internal assessment and external examination marks. This has caused a lowering of standards, though students seem to go along with the system. But having external examination in all subjects at the end of each semester has caused considerable inconveniences in arranging for prolonged periods of examinations. In addition there are always delays in declaring the results of the external examinations. Many a time the results of the examinations of the previous semesters are not available before the deadline for filling application for the next semester's examinations !

Students complain not infrequently that internal evaluation is more abused than used. The marks are inflated to show better results and some meritorious students get frustrated. The contrived semester is sometimes a cover for the inefficiency and lapses on the part of teachers. As it has been observed "far from forging a link between the teacher and the taught and establishing a rapport which would be conducive to pupil growth, internal assessment alienated the student community further from the teachers".

The apparent failure of the semester system with full internal assessment is not due to the defects in the system but to a lack of imagination towards adopting the system to the Indian condition.

Academicians and administrators are not involved in trying this forward-looking educational reform. The internal assessment can be adopted in stages with a built in mechanism to prevent its abuse by the teachers. If necessary, outside examiners may be appointed to examine the validity of the internal assessment of teachers. There should be provision for students to seek remedy through an Appeals Committee which should consist of academics from outside the institution. Teacher Associations should take an active interest in this vital educational reform and find ways and means to make it work. We cannot overlook the fact that internal evaluation has been a success in autonomous institutions. If greater autonomy can help colleges towards successful implementation of these educational reforms, the universities should come forward to loosen their hold on the affiliated colleges. □

[*Courtesy* : *The Hindu*]

CAMPUS NEWS

Gorakhpur plans jubilee celebrations

The silver jubilee of Gorakhpur University which came into existence in 1957 will be celebrated from February 1 to December 31, 1982. At a meeting of the University Court held recently it was decided to constitute a committee for the purpose with Dr S.N.M. Tripathi, founder member of the university, as the convener. Other members of the committee are ; Mahant Avaidya Nath, Sir Surendra Singh Majithia, Dr Vidya Newas Mishra, Mr K.P. Singh, Prof. S.P. Nagendra, Prof. S.N. Mathur, Prof. L.B. Tripathi, Mr Rai Rajeshwari Prasad, Mr Surendra Prasad Srivastava and Mr Purushottam Das.

Dr Tripathi has a proposal to collect Rs 35 lakhs from the public. Besides, efforts would also be made to obtain the maximum possible amount of grants from the University Grants Commission and the State Government. He said that though the university, at present, has got a Faculty of Agriculture with some affiliated colleges teaching the subject, there is no such department in the university itself. Hence it was proposed to establish an agriculture college by the university. The sports activities in the university were also greatly handicapped for want of a stadium which is proposed to be constructed soon. A women's college will also be started with graduate and postgraduate courses exclusively for women students. Stressing the necessity of constructing more hostels, Dr. Tripathi said that at present there were about 7,000 students in the residential wing of the university. But the total number of students who could be accommodated in the existing hostels is around 700. More hostels would be constructed to provide lodging facilities. During the jubilee year it was proposed to organise academic lectures, dramas, kavi sammelan and other cultural programmes.

Four Punjab colleges selected for IAS training

The Punjab Education Minister, Mr. Harcharan Singh Ajnala, while laying the foundation stone of a Rs. 5-lakh new building at the Guru Nanak Dev University, said in Amritsar that the government had selected four colleges which will prepare students with a good academic record drawn from all colleges of the State for specialised training to equip them for competitive examinations for all-India services such as IAS, IFS and IPS. This step has been taken as the Punjab's share in such activities was declining over the years. Besides, he had a scheme under consideration to improve the quality of education and to introduce more and more job-oriented courses to diversify education so as to send such of the students who may not make a grade in academic studies to the technical side.

Dr. K.S. Gill, Vice-Chancellor of the University, while welcoming the Minister said that the university needed buildings for the Registrar's office, sports complex, houses for university teachers and other members of the staff, extension of women's hostel, regional centre of the university at Jullundur. All these are estimated to cost Rs 70 lakhs to the university.

Invigilation made a statutory obligation

A Bill is being introduced in the Legislative Assembly of Tamil Nadu to make invigilation at examinations part of the duties of the teachers and members of the non-teaching staff of affiliated colleges and universities in Tamil Nadu. It has been provided that refusal to undertake the work assigned by the university or college would result in forfeiture of pay and allowances of the person concerned for a period of three months from the date on which the examinations were scheduled to commence and that appropriate action would also be taken for dereliction to duty apart from the action that may be taken under the Act.

First Asian congress of fluid mechanics at Bangalore

The Indian Institute of Science and National Aeronautical Laboratory are jointly hosting the First Asian Congress of Fluid Mechanics during 8-13 December 1980 at Bangalore. The Congress is being organised under the direction of the International Scientific Committee under the Chairmanship of Prof. H. Sato (Japan) and the National Organising Committee under the Chairmanship of Prof. S. Dhawan. Nearly three hundred delegates are expected to participate in this Congress, which is the first of its kind. The scientific programme includes invited general lectures and special lectures and contributed papers. The purpose of the Congress is to provide a forum for exchange of ideas among fluid-dynamicists in Asia, and for presentation and discussion of work done in fluid mechanics in Asia as well as elsewhere.

Papers are expected to be presented in all branches of fluid mechanics, describing basic research (theoretical or experimental) as well as applications. In particular, the following areas have been included:

* Viscous flows including boundary layers
* Turbulence
* Wave phenomena, vortices
* Gas dynamics and combustion
* Heat and mass transfer
* Multi-phase flows
* Computational methods
* Experimental methods

- Technological applications, including turbomachinery, flow-induced vibrations, etc.

Registration fee for the conference is US $50, or for participants in India is Rs. 400/-. The fee will be reduced to US $40, or for participants in India to Rs. 320/-, if it is received before October 15, 1980.

Funds for partial support of a small number of participants are available. Applications should be addressed to the ACFM Secretariat National Aeronautical Laboratory, Bangalore-560017.

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Research group for the study of Deccan Volcanism

The Deccan Trap which occupies a vast area of 500,000 sq. km. in Central and Western India, is the largest flood basalt pile in the world. Hence, a study of how, when, in what sequence and by what processes the Deccan Trap came into existence is of crucial importance in the understanding of the fundamental earth processes.

The results of such a study can have considerable economic significance for India. For instance, the data on the structure, morphology, sequence and petrochemistry etc. of the lava flows could help in the utilisation of the ground-water potential in the drought-prone Deccan Trap areas of Maharashtra, M.P. & Gujarat, and in the location and design of engineering structures for the optimal utilisation of the waters of the Narmada River which largely flows through the Deccan Trap Country.

At the time of the IUGC General Assembly, Canberra, Dec. 1979, the International Association of Volcanology and the Chemistry of the Earth's Interior (IAVCEI) which is a constituent Association of IUGC, decided to set up an international group to promote, coordinate & collate researches on Deccan Volcanism, because of its global scientific importance. Prof. U. Aswathanarayana, Head of the Centre of Advanced Study in Geology, University of Saugar, Sagar, M.P. has been chosen the Leader of the Working Group on Deccan Volcanism. The other members of the Group are : Prof. A. McBirney (USA), Prof. M. Manghanani (USA), Dr D.A. Swanson (USA), Dr T.L. Wright (USA), Dr K.G. Cox (England), Prof. G.P.L. Walker (New Zealand), Prof. A.I.Al' Mukhamedov (USSR), Prof. V. V. Zolotukhin (USSR), Prof. S. Aramaki (Japan), Prof. M. Kono (Japan), Prof. Gonzales-Ferran (Chile), Prof. C. Brooks (Canada), Dr. K.V. Subbarao (India), Mr S.S. Deshmukh (India). It is proposed to set up sub-groups in the following areas:

(i) Geologic and tectonic setting and morphology (including hot spots and intraplate Volcanism), (ii) Petrology-Mineralogy (including Theoretical & Experimental Petrology), (iii) Geochemistry (incl. trace element and isotopic geochemistry, geochronology and petrogenetic models), (iv) Ore deposits and geothermal energy (v) Planetary basalt comparisons (vi) Physics and chemistry of the Upper Mantle (including association with carbonatites and kimberlites), (vii) Geophysical studies (including Deep Seismic Sounding) and (viii) Other aspects.

At the kind suggestion of Prof. S.A. Fedotov, President of IAVCEI, it has been decided to effect comparison of Deccan Traps with other flood basalt piles in the World. Apart from promoting the exchange of scientists in this area, it is proposed to establish in the University of Saugar a Data Centre of Deccan Traps (and other flood eruptions) by bringing into existence a reference collection of publications, samples, thin sections, Cores, maps, data sheets, etc. The international programme on Deccan Volcanism is being modelled after the International Indian Ocean Expedition (IIOE) and Monsoon Experiment (MONEX).

Delhi scraps grading system

The Academic Council of Delhi University has decided to abolish the grading system from the current academic session. The decision will affect the post-graduate students and was taken on the recommendations of the Examination Reforms Committee. The grading system was introduced three years ago and was not popular with the students. The recommendation of the law faculty to have a month's vacation in December instead of autumn and winter vacations each of 15 days was also accepted by the Council.

Council against autonomy for colleges

The Academic Council of Bangalore University at its last meeting held in Bangalore did not approve the suggestion of the Government to grant autonomy to affiliated colleges. Mr. T.R. Jayaraman, Vice-Chancellor of the university said that it was not opportune to grant autonomy either administrative or academic to affiliated colleges. When the university itself did not enjoy autonomy in its relation with the Government how could it grant autonomy to the affiliated colleges. But he was in favour of granting autonomy to a few selected colleges.

Agriculture

Lab-to-land programme extended in Cuttack

Encouraged by a 300 per cent increase in yield under the CSIR sponsored Lab-to-Land programme last year, the Central Rice Research Institute (CRRI), Cuttack has extended the programme for two years.

CRRI Director H.K. Pande said under the original programme Bageswarpur, Bhatipur, Totapara, Prabhakar Nadua and Sultannagar villages comprising 300 small and marginal farmers' families in the Pipi block of Puri district were adopted.

Stress was laid on those belonging to the Scheduled Eastes and on landless peasants. Those having land above two hectares were excluded.

The technology that was used in the Lab-to Land programme launched on the occasion of CSIR's Golden Jubilee, was the same as that used in the CRRI's earlier "Operation Rice Research Project" that embraced 1,200 acres in ten villages at Kandarpur in Cuttack Sadar block, where the farmers were guided in effective pest control measures.

The earlier project included proper water management facilitating even three crops a year, selection of seed varieties according to land situation, timely planting to ensure maximum plant population, timely weeding and application of fertilizer, it also included fish culture in collaboration with the Central Inland Fisheries Research Station, Cuttack.

This project was later extended to include another 1,000 acres at Nakhra near Bhubaneswar where the main emphasis was on doubling the yield through scientific distribution of the Puri Canal water through prefabricated cement water channels. The idea here was only to guide the farmers without giving them any inputs.

Litchi centre for HPAU

A litchi and mango research station is being opened by Himachal Pradesh Agricultural University at Nagrota, about 18 km from Dharamsala. It is proposed to plant 800 mother plants of litchi in an area of about two acres during the next four years. A nursery of litchi and mango plants will also be developed. A sum of Rs 50,000 has been sanctioned for cultivation of litchi and its allied research projects.

Dr R.P. Awasthi, Associate Professor, Department of Horticulture and Fruit Technology at Palampur campus feels that the litchi cultivation would be of great potential in areas situated at a height of 1,000 to 3,000 feet above sea level. Such areas in Kangra district lying between Shahpur in Kangra sub-division to Chadiar in Palampur sub-division, would be an ideal site for such cultivation. At present it is estimated that about 100 acres are under litchi cultivation in various parts of Kangra district. The growers often face the problem of proper irrigation facilities and availability of grafted material for growing new plants. A litchi plant starts bearing fruit after about five years. Its average yield varies from one quintal to two quintals.

PAU demands more flexibility

The Board of Management of Punjab Agricultural University has recommended to the State Government to provide complete autonomy to reappropriate funds from one scheme to another within the overall allocations under the plan and non-plan heads. The Board at its recent meeting held in Ludhiana has further recommended that the block grant for the university should be fixed after making a proper assessment of its requirements of funds for a period of five years with an annual increase of 4 to 5% over the previous grant. In a memorandum to the State Government the PAU authorities have submitted that a few agricultural universities are given block grants for a period of five years and have the freedom of reappropriating the funds according to their needs. Such universities are Andhra Pradesh Agricultural University, Hyderabad, University of Agricultural Sciences, Bangalore and Tamil Nadu Agricultural University, Coimbatore.

The university did not experience any financial difficulty earlier as the State Government had been releasing full grants but for some time the Government had not been liberal and the overall grants have been cut quite often particularly under the non-plan schemes. The Board has therefore recommended that the State Government should provide additional grants during the current financial year to meet this gap.

Scientific equipment for HAU

The Alexander von Hummboldt Foundation of the Federal Republic of Germany has made a grant of valuable equipment to the Haryana Agricultural University. Hissar. The equipment includes a spectrophotometer and a gas liquid chromatograph with accessories. The total value of the equipment is Rs 3;80,000 (DM 88,000).

The gift of equipment is in recognition of the research work done by Dr. S.K. Arora, who had been to Munich as a scholar of the Alexander von Humboldt Foundation.

Dr C. Niemoeller, Cultural Counsellor in the Embassy of the Federal Republic of Germany, New Delhi, officially handed over the equipment on behalf of the Fundation to Dr P.S. Lamba, Vice-Chancelor of the University.

Dr. Maharaj Singh, Director of Research, welcomed the guests. He pointed out that the gift not only demonstrated the interest of the Alexander von Humboldt Foundation in supporting the research of its former scholars through the contribution of essential equipment but also underlined the efforts of the Federal Republic of Germany in strengthening cooperation between scientific institutions of the two countries.

Conferences

New thrust to R&D in Science, Technology Plan

The two-day conference of scientists and technologists, convened by the Government, concluded after identifying the Research and Development areas which required thrust and delineating the broad approach to a Science and Technology Plan for 1980-85.

According to Mr Vijay N. Patil, Union Deputy Minister for Science and Technology, the new areas of thrust will include modernisation and strengthening of the education system, control of communicable diseases, new sources of energy and bio-technology.

Mr. Patil and Dr. M.G.K. Menon, Secretary to the Department of Science and Technology said that a broad Plan frame for science and technology would be drawn up on the basis of the discussions at the conference. After this was approved by the National Development Council, detailed planning would be undertaken. The idea was to ensure that science and technology effort formed an integral part of the overall Plan and meshed with the development process. In this context, the Prime Minister's statement at the inaugural function was reassuring and positive.

Dr Menon said the discussions covered a wide spectrum of activities, and the consensus was that the Indian scientists could show results if clear-cut tasks were set for them. New areas, which required thrust were identified.

One of the conclusions at the conference was that the education system which was the source of scientific manpower, should be strengthened. It was felt that the university laboratories, which got little support, should be strengthened so that they would have effective link with the national laboratories and production system.

The UGC Vice-Chairman, Dr B. Ramachandra Rao, said that it was proposed to finance selected universities to improve their academic levels. If once at least 50 per cent of the universities were improved. They would be able to interact effectively in basic and applied research.

Another priority area identified related to studies on coal. With the hike in oil prices, it was felt that the possibilities of greater use of coal to replace oil should be explored. According to Dr G.S. Siddhu, Director of the Regional Research Laboratory, Hyderabad, the R and D effort in this field would be directed towards the use of coal as alternative feedstock for the chemical industry now based on oil; improving the energy of coal by removing the ash content; and transport of coal in different forms like slurry and gas to reduce the burden on the railways. Technology might have to be imported for these, but it would be coupled with efforts to absorb it.

A third area, identified for major thrust, related to biotechnology. According to Dr. V. Ramalingaswami, Director-General of ICMR, modern biology and its application would be accorded priority in the Science and Technology Plan. He listed immunology, genetic engineering and use of bio-mass as alternative sources of energy which offered great promise in changing the face of industrial activities. Large-scale application of these techniques was proposed and, as a back-up, the study of biology would be strengthened in universities and IITs.

In the field of agriculture, discussions brought out the need for a strategy to raise farm output by minimising the use of energy and fertilizer which had become costly. It was felt that studies on microbial techniques should be given priority.

Dr Menon said the question of reducing the import of technology also figured, and various, factors, that came in the way of greater utilisation of indigenous technology, were examined.

Crisis in Indian Science

A group discussion on "Crisis in Indian Science" was held recently at which. Mr. P.N. Haksar, former Chairman of the National Committee on Science and Technology and Deputy Chairman of the Planning Commission initiated the discussion.

At the very outset Mr Haksar stated that the subject matter under discussion was of extraordinary complexity and that one may not be able to reach any worth-while conclusions in the course of one session. There was a vast amount of literature dealing with the growth of Science in a given society at a given time. However, discussions on the subject in India have not, to his knowledge, been worth while. It seemed to him that the growth of Science in India required an in-depth analysis of our social structure, our culture, our tradition, our modes of thought as well as the general stimulus given to Science by the specific economic and other conditions prevailing in our country.

The crisis in Science such as we are witnessing in our country today was not peculiarly Indian phenomenon. Form time to time voices have been raised against Science even in the western world. In the middle thirties of this century, doubts about the efficacy of Science and scientific method were raised in Great Britain and there has been regression elsewhere too.

Today, in the United States itself, voices have been raised against Science. There are people going round convassing support for revision of textbooks demanding that the act of creation be given as much space in school text-books as the case for Darwinian Evolution.

It seemed to the speaker that whenever the dynamics of Science and of society were not in consonance a conflict tended to arise. It was rather like the grafting of a tissue which, sometimes, a body did not accept. In India, it seemed that the crisis in Science was intimately related to the crisis in Indian society itself. Our society is not animated by a prevasive spirit of enquiry which is a necessary, though not sufficient condition, for growth of Science. While an outstanding scientist is a genetic phenomenon, his growth and flowering and the permation of his ideas throughout society were social phenomena.

Mr Haksar contrasted the spirit which animated a man like C.V. Raman or Meghnath Saha or S.N. Bose to the prevailing spirit in post independence era. Raman and Saha and others of his generation accepted the challenge of the West. With tremendous sense of national pride they proclaimed that we Indian "blackies" could produce as good a Science as the white races. They were not interested in the current urges for scientific tourism or for a desire to publish these paper in foreign journals. So we have a phenomenon where we have growth of the scientific community which is not animated by a sense of challenge. This is further aggravated our scientific community's collective lack of confidence that they would find among themselves their peers to assess their work and to stimulate discussion and interaction. Our Science academics are decorative. The fact that the Government itself has become a consumer of large number of scientists has had a deleterious effect on mutual inter-action between our scientists. A lack of defined challenge posed by our society and Government to our scientists make the community lacking the purpose. Also, our political processes feed on backward moulds of thought which has the effect of drastically curtailing the spirit of enquiry, respect for facts and respect for rationality. We still have not been able to liberate our minds from the ancient doctrines on human spirit and human existence and its evolution. We are overwhelmingly concerned with personal salvation which under material conditions prevailing at present is degenerating into a most reckless and immoral accumulation of wealth. Another major cause of crisis in Indian Science is the meagre resources devoted to its nurturing so that we even have in the former Chairman of the National Committee on Science and Technology, Dr Atma Ram, a person who said that India did not need Science so much as it needed technology which could be bought. Some visiting Western Scientists have objected to our pursuit of basic sciences as wasteful expenditure.

It is not realised that in every area of our national endeavour we need basic Sciences of the highest order. Take the simple question of health programme for millions of our people. In this area alone we need basic researches and not more technology. In another area, of doing something with our renewal resources, we again need basic Sciences. And yet Biological Sciences are perhaps the most neglected in our country. In Physics, those who qualify today have hardly any market. University Science and Mathematics specially are decaying despite brave attempts who maintain certain centres of excellence. What can these centres do if talented scientists prefer to go in for commerce or management or even for civil services.

While we talk of self-reliance we have not spelt out this concept in terms of policies, programmes, resources, etc. Today, we are more dependent on foreign aid than ever before. Even in areas of relevant research we have more collaborations than before and many of these collaborations reflect not our national interests but the national interest of the dominant countries imposing collaboration on us, especially in the area of health.

There is crisis also in technology policy and programme. In the early years great deal of technology and industry grew under the slogan of "Import Substitution" but now we do not know precisely what are the aims and objects of our technology policy. Witness the chaotic conditions prevailing in the area of tractor and power tiller technologies, diesel engines, drugs and pharmaceuticals, cosmetics, etc.

We developed competence and capacity for designing fertiliser plants and yet we still continue to give turn-key contracts to foreigners. We set up a tremendously competent organisation for designing steel plants and yet, the fact remains that after 30 years of independence our designers and engineers have not been given chance to design a single steel plan fabricated in India. We go on importing the same and similar technology repeatedly. There is no national import of technology and its further development, whether in private or public sector, with proper support of local R and D institutions.

While we talk a great deal about planning, there has been up-to-date no purposive linkage between Science, R & D and planned development. That is why we have not merely a general crisis in Science but very painful crisis within the established institutions both of Science and of Technology. The entire field of atomic energy was in crisis. There was crisis similarly in the whole area of space research. Apart from having a coloured television we do not know the directions in which space research should grow. The same applies to a very large area of Science and Technology in India.

The current economic stagnation and inflation will bring about further distortions both in the growth of Science and in Technology.

UGC News

UGC grants for short-term courses

The University Grants Commission has decided to provide financial assistance to the universities for introduction of short-term diploma courses to increase the chances of employment for students and to give them confidence in self-employment and entrepreneurship. The short term courses suggested in such areas are : transport management, accountancy, office management, electronics and instrument repairing. The Commission's scheme of restructuring of courses has two important aspects. One, to make the degree course more relevant to the rural environment and to the development needs of the community. Two, to link education with field work, practical experience and productivity. The scheme is meant for all colleges and not merely for those located in the rural and backward areas. In order to enable a good number of colleges to participate in this scheme, the stipulation regarding the minimum enrolment and the minimum number of teachers as laid down by the Commission in respect of the development of affiliated colleges will not be insisted upon while examining proposals for restructuring courses. Under the scheme about 200 colleges have been identified initially to try out the new combinations of courses. The colleges have been selected in the vicinity of agricultural universities and Krishi Vigyan Kendras so that these institutions can help the colleges in drawing up the syllabi for the new subjects with a practical rural orientation.

The Commission has also issued guidelines to the universities for the reorganisation of courses at the undergraduate stage following 10 years of schooling. The universities have been requested to keep certain considerations in view—updating, diversification, flexibility, social responsibility, interdisciplinary approach and practical operation of courses. The universities have also been asked to provide in their curriculum a set of foundation courses under which one may introduce such themes as Indian history and culture, the history of freedom struggle, the concepts and processes of development, population education, the cultures of Asia and Africa, Gandhian thought and science and society.

Courses in space sciences to be encouraged

A Coordination Committee between the University Grants Commission and the Indian Space Research Organisation has been set up for joint cooperative programmes in universities and academic institutions on space research. Besides selecting areas of research, the committee set up in 1976 would also recommend appropriate teaching and training programmes.

Over a period of four years a total of 137 projects have been funded by the Commission and Space Research Organisation. With a commitment of over 164 crores the implementation of these projects is expected to lead to the development of a reasonably good academic base in some major areas of space research. With India joining the exclusive five-member Space Club by launching a 35 kg technology satellite Rohini-4 it has been decided to give special importance to courses in space. Courses in space sciences have been started by a number of universities within the existing departments of Physics. The University Grants Commission, however, has told these universities that the courses should be organised on an all-India basis to attract the best students. At least half the students admitted should be from universities outside the State concerned. Provision has also been made for students of these courses to take up project work in one of the ISRO centres at Ahmedabad, Thumba or Sriharikota. Space research has emerged as an important area of University Grants Commission activity with nearly 60 projects currently under way on its various aspects. These cover space sciences themselves besides the technology involved and their application.

Grants for space research by the Commission have increased many times in recent years. Presently, these grants are in the neighbourhood of Rs. 50 lakhs with more than a dozen universities involved in research.

Higher Education and the University

(*Continued from page 474*)

called but few are chosen.' Only those who show real capacity for higher learning and have a desire to specialise in one area of knowledge will take up Post-graduate studies. Then , a highly selected small number from among those who have reached the second storey will ascent to the top floor were the 'frontiers of knowledge' are reached.

But it must always be remembered that education in its fullest meaning is much more than knowledge or scholarship. Education is 'bringing up' or 'leading forth': it is the attainment of fullness—what Shakespeare called "ripeness". Knowledge is a very important element of ripeness, but only an element. True education must include development of the body and training of the affections and emotions as well as the development of mental faculties and the acquisition of learning. Higher education must be thought of as a process of acquiring that fullness or ripeness which enables and qualifies one to become a "master" or "doctor" who can then help to educate others. It is a lifelong process. □

UGC lays stress on women education

The University Grants Commission has urged the universities that any plan for the development of women's education will have to take into account the imbalances and variations in regional and sectional attitude towards women's education. These factors have contributed to the increase in the inequality between men and women in the sphere of education. The Commission has asked the universities that women should be given opportunities for vocational training and employment. It has reminded the universities and the State Governments that the recommendations of the Committee on the Status of Women should be implemented with particular reference to higher educational opportunities to women at the university level. More and more women are taking to university education in the country. The percentage of enrolment of women in the universities has progressively increased from 20 in 1969 to 25.8 in 1976-77. The number of women's colleges has also gone up by nearly 25 per cent.

More colleges seek autonomy

The scheme of autonomous colleges launched by the University Grants Commission has received much attention during recent years. A large number of applications have been received from the colleges for grant of autonomous status. Most of the new applications have come from Tamil Nadu which even accounts for 12 of the 13 autonomous colleges in the country. The only autonomous college outside Tamil Nadu is the Birla Institute of Technology at Ranchi. A decision to grant autonomous status to more colleges would be taken after evaluating the performance of the existing ones.

UGC assistance to colleges with SC students

The University Grants Commission provides assistance for development of colleges. In respect of buildings, the assistance is 50 per cent and the matching contribution by the management is 50 per cent. However, in the case of colleges in backward areas that have a scheduled caste/scheduled tribe student strength of one-third of the total enrolment or 100 whichever is less will be eligible for assistance under the general development scheme and the matching contribution would only be one-third. This information was given by Shri B. Shankaranand, Minister for Education, Health and Social Welfare at the second meeting of the Consultative-Committee for the Ministry of Education and Culture held recently. He added that such assistance has been discontinued for other colleges at present.

A member suggested that the Indian National Commission for Cooperation with UNESCO had not met in 1979 and thas it early date. He also suggested should be reconstituted at an that the new Committee must meet at least once before the end of this year. The Minister assured the Committee that he will look into the matter.

It was suggested that the next meeting of the Consultative Committee should be held in South India. Hyderabad was suggested as one of the possibe venues. The Minister promised to consult the State Government.

Foreign News

Pakistan centre for South Asian studies

Pakistan's only Centre for South Asian Studies in Lahore is in the process of reorganisation. The Centre at the Punjab University would now collect data and do research on military, political, scientific, technological, social and cultural developments in the region with particular emphasis on India. There are plans to transform the centre into a premier research institution of Pakistan with financial help from the University Grants Commission. Dr Rafiq Ahmad, an Economist and Pro-Vice-Chancellor of the University heads the centre. He plans to make available to scholars information sheets about scientific, educational, trade, governmental, political, journalistic and military aspects of India. Top priority has been given to the establishment of an excellent library on South Asia and there is a plan to bring out a South Asian journal of international standing. Acquisition of books, journals and newspapers concerning South Asia would be the main problem for the centre. At present there is no import of books and periodicals from India.

The Centre for South Asian Studies at Lahore was set up six years ago by an act of Parliament. Centres for Central Asian studies and European studies were then established at Peshawar and Karachi universities respectively.

Britain welcomes foreign students

The British Government has clarified that it welcomes overseas students, including those financed under the aid programme, at British technical colleges and universities. Britain will continue to make substantial contributions through its aid programme to the education and training needs of developing countries.

From the technical cooperation funds within the aid programme allocated to schemes such as the Commonwealth Scholarship and Fellowship Plan it should be possible to maintain a substantial level of training in the U.K. as part of Britain's overall contribution to the education and training needs of developing countries. The support available from the aid programme will continue to be used for helping carefully selected students and trainees on courses which enable them to make an early contribution to the development of their countries on their return.

With regard to the questions about the increase in student fees, Mr Mark Carlisle, Secretary of State for Education and Science, said that while he saw no prospect of a general exemption from fees for Commonwealth students, he had informed the Secretary-General that he would be very ready to consider proposals and alternative strategies for funding which Commonwealth countries might have to suggest.

AWARDS

INSA awards

Fifteen young scientists have been selected by the Indian National Science Academy for science academy medals for the year 1980. The awards were instituted in 1974 to give recognition to the scientific achievements of scientists below the age of 35 years. Following are the recipients : Dr Prabha Agrawal, University of Indore; Dr D.V. Amla, National Botanical Research Institute, Lucknow; Mr R. Balasubramaniam, Tata Institute of Fundamental Research, Bombay; Dr M.A. Barma, Tata Institute of Fundamental Research, Bombay; Mr D.K. Chakrabarti, Banaras Hindu University, Varanasi; Dr S.S. Mehetra, Mahatma Phule Krishi Vidyapith, Rahuri Distt, Ahmednagar; Mr Madhav V. Nori, Tata Institute of Fundamental Research, Bombay; Dr D. Pandey, Banaras Hindu University, Varanasi; Dr N. Pattabhiraman, Indian Institute of Science, Bangalore; Dr Sudhir Paul, All India Institute of Medical Sciences, Ansari Nagar, New Delhi; Dr S.S. Pillai, Calcutta Medical Research Institute; Mr E.S.P. Reddy, Regional Research Laboratory, Hyderabad; Dr N. Sathyamurthy, Indian Institute of Technology, Kanpur; Dr A.K. Saxena, University of Roorkee and Mr V.N. Vasudev, Dept. of Mines and Geology, Bangalore.

VKRV awards

The Prof. V.K.R.V. Rao awards for 1978 have gone to Prof. Sukhamay Chakravarti for Economics, Dr Satish Saberwal for Sociology and the late Dr J.P. Ambannavar for Demography. The three prizes of Rs. 5,000/- each instituted in 1977 by the Institute for Social and Economic Change are awarded annually to the social scientists below the age of 45 who through original research have contributed to the advancement of knowledge. The prizes are awarded in the field of Economics annually and in Sociology, Demography, Human Geography, Public Administration, Education, Political Science, Psychology, History and Linguistics, by rotation.

Hari Om Ashram awards

Dr S.C. Gupta, closely associated with the control and guiding system of the SLV-3, is among the four distinguished scientists who will receive the "Shri Hari Om Ashram Prerit Dr Vikram Sarabhai Research Awards" for 1979.

The other three scientists to receive this award are: Prof A.B. Bharattacharya of the Indian Institute of Technology, Delhi for his contribution in the field of electronics and telecommunications, Dr K.S. Krishnaswamy of the Tata Institute of Fundamental Research for his pioneering work in the field of planetary and space sciences and Dr S.K. Ghosh, Director of the Meteorological Office, Delhi, for his research on a number of complex phenomena related to the Indian summer monsoon and for prediction of storm surges which cause severe damage to life and property.

Classified Advertisements

(*Continued from page 496*)

1. **(a) Scale of Pay**

Rs. 700-40-1100-50-1600, with D.A, H.R.A., C.C.A., etc. as per University Rules.

(b) Age Limit

Not more than 30 years as on 1-9-80. The age limit can be relaxed in case of inservice candidates of J.N.T. University. For S.C., S.T. & B.C. candidates the age limit is relaxable by 5 years.

(c) Qualifications

A First Class Masters Degree in the concerned subject with consistently good academic record.

(d) Specialisations Required

1. **Civil Engineering** : (i) Soil Mechanical & Foundation Engineering. 2. Transportation Engineering 3. Building Technology 4. Structural Engineering/Survey and Photogrammetry.

2. **Electrical Engg.** : Instrumentation or real time control of power systems or power systems

3. **Mechanical Engg.** : Machine Design, Foundry Instrumentation. 4. **Electronics and Communication Engineering** : Micro-waves, Communication systems, Advanced Electronics, Computer hardware, Computer Engineering, Radar and Micro-wave Engineering, Solid State Devices and Circuits, Active network synthesis, Digital Electronics.

Candidates interested may apply on plain paper to the Registrar, Jawaharlal Nehru Technological University, Humayunnagar, Hyderabad-500028, enclosing a Demand Draft for Rs. 15/- (Rupees 3/- in case of S.C. & S.T. candidates) in favour of Registrar, J.N.T. University Hyderabad, payable at any of the scheduled banks at Hyderabad along with the application form so as to reach him on or before **12-9-1980** furnishing the following information.

Post applied for, Name in full (Block Letters), postal address to which cummunications should be sent, date of birth and age, whether belonging to S.C./S.T./B.C., Educational qualifications, Experience (teaching and non-teaching), any other information, Signature of the candidate.

REGISTRAR

Note :

Persons who are employed should submit their applications through their employer.

Persons claiming to belong to S.C./S.T./B.C. should produce the Community Certificate from the appropriate authorities.

Late applications will not be entertained.

GAUHATI UNIVERSITY

Corrigendum to the Advertisement No. 10 of 1980

Item No. 3. Reader/ S. S. O (For Mechanical Section) One post. (5th Plan)

Item No. 4: Reader/SS.O. (For Electronics Section) One post. (5th Plan)

are withdrawn for the present.

SPORTS

Asiad preparations to be completed by 1982

The work connected with the hosting of the Asian Games is expected to be completed by May, 1982. The Government has already appointed a steering committee and a coordination committee for this purpose. The coordination committee which met in New Delhi recently has fixed deadlines for the various agencies to complete the work. Three more sub-committees have been constituted under the steering committee. The one under the Secretary of Electronics Department will be dealing with the electronics equipments needed for the conduct of the games and will be submitting its report by September 15. The sub-committee under the charge of Defence Secretary will be responsible for the opening and closing ceremonies of the games and the one under the Tourism and Civil Aviation Secretary has been entrusted with the job of controlling the tourist flow and making satisfactory arrangements for the visitors in respect of accommodation and internal travel.

Six other sub-committees formed earlier are under the Secretariat of the Ministries of Finance, Works & Housing, Transport, Communication, Law and Health. The coordination committee will be working under the Prime Minister's secretariat and will involve in its deliberations Ministers and Secretaries not included in the steering committee if the need arose.

The Chairman of the steering committee, Mr. B. Shankaranand, has expressed a desire to have arrangements comparable to the Olympic standards as far as possible, especially in respect of electronic equipment. Instructions have also been given to the Railways to give top priority in the movement of cement and steel once the construction gets started. Likewise the Ministries concerned with steel and cement have also been directed to ensure prompt supply. The steering and coordination committees are at present in touch with the Indian Olympic Association directly on technical matters.

The halls at the Pragati Maidan will be utilised for conducting the games. Table tennis will be held in the Hall of Industries and badminton in the Hall of Nations. The 25,000-seat capacity stadium being planned by the Delhi Development Authority will be venue of Volleyball. Basketball will be held at the existing NDMC Indoor Stadium at Talkatora Gardens. The NDMC will construct a new covered swimming pool for equatic competition. While the men's hockey is to be played at the National Stadium on artificial surface, the plans so far indicate that the women's hockey tournament would be held on grass at the Shivaji stadium. Except for the semi-finals and final, the football matches would be held at the Feroze Shah Kotla ground. The semi-final and finals will be played at the new 75,000-capacity stadium which is to be the venue for athletics as well as opening and closing ceremonies.

Rai which will be holding six disciplines will have a new indoor stadium for gymnastics and weightlifting, a new velodrome for cycling and a new range for shooting. Wrestling and archery will be held at the existing facilities at Rai after necessary renovations.

NSS programmes at Delhi

The NSS has ushered in a new phase of expansion and growth, both qualitatively and quantitatively, in the year 1979-80. In figures and numbers the students' enrolment touched the target of 13,000 under the Regular Programme covering Delhi University, Jamia Millia Islamia, Indian Institute of Technology, All India Institute of Medical Sciences and Jawaharlal Nehru University and nearly 4000 campers for the special camps during the year. Enrolment of female volunteers had been fairly high and constituted 35% of the total enrolment. Similarly the women volunteers who attended the special camps, during the year, constituted one third of the total number of campers.

Coming to the quality of work, varied and numerous areas were brought under the programme during the year. In fact, the much awaited slogan of 'university comes to community' was now more a reality than a mere verbal Jargon.

To highlight some of the activities, it is noteworthy that Hospital Service' was the most popular service and the most sought after programme among the colleges. Nearly all the hospitals of the metropolis were brought under the sway of NSS for overall patient-care, propagation of health-care, providing guidance to new patients, helping authorities in preparing health-charts and other records etc.

Blood Donation and Traffic Control projects were yet another haul-marks in the long array of service. More than 1000 student volunteers from different colleges of Delhi University donated blood to the 'Indian Red Cross Society'.

That year was marked by the International Year for Children. Therefore, NSS had its share towards the welfare and happiness of the children'. Nearly 35 colleges of Delhi University and All India Institute of Medical Sciences and Jamia Millia Islamia got hold of children in their respective locality and gave them educational, recreational, medical and ethical boost-up to groom them into good and responsible individuals. Under this scheme small children were given coaching in collaboration with their school teachers. Some drop-outs were enlisted and parents were contacted to educate them on significance of education in the present context.

Women were not left untrapped. Five women colleges, in collaboration with the Central Welfare Board and the State

Welfare Board, had organized courses for women in their respective adopted complexes. This included tailoring, knitting, dool-making, beautician trades and textile designing. More than 700 women were benefitted.

Further NSS volunteers were trained in Rescue Relief Techniques, in Civil Defence and in the art of nursing (for women) in collaboration with the Joint Assistance Consultancy. Legal-Aid-Clinics were opened and small saving was boosted up. Mobile creches were opened for children of the working-class women. Institutes of physically handicapped and disabled persons were regularly visited such as Cheshire Home, Bal Bhawan, Harijan Sevak Sangh and Seva Kutir etc. Primary schools were adopted by some NSS units to give them overall face-lift and to give primary education a real universal touch. Health and Hygiene Programmes covering anti Malaria campaign and mass-immunization and health-check-up were very popular on campuses of the faculty of Medicines. Training of non-medical, NSS volunteers by the All India Institute of Medical Sciences. NSS Unit in the Community Health and Preventive Measures were good inter mixture of 'professionals' with 'non-professionals' besides its practical application.

Personal

1. **Shri G. C. Chaturvedi, IAS, has taken over as the Vice-Chancellor of Gorakhpur University.**
2. **Dr. P.L. Malhotra has been appointed Vice-Chancellor of Himachal Pradesh University.**
3. **Dr. Shyam Nandan Kishore has been appointed Vice-Chancellor of Bihar University.**
4. **Shri K.R. Narayanan, Vice-Chancellor, Jawaharlal Nehru University, New Delhi, has been appointed Indian Ambassador to the United States of America.**

AIU's Sports Calendar

The Association of Indian Universities have announced the schedule of sports and games for the year 1980-81. The details are given as under :

Games on Two-Zone Basis

Basketball (W) : S.Z. & I.Z.: Madras; I.Z. from 3rd November, 1980. N.Z.: Vacant.

Kabaddi (M): N.Z. & I.Z.: Kurukshetra; S.Z.: Saurashtra; I.Z.: 27th October, 1980.

Table Tennis (M&W) : N.Z. & I.Z.: Jadavpur; S.Z.: Bombay; I.Z.: 30th September, 1980.

Tennis (M): N.Z. & I.Z.: Rajasthan; S.Z.: Kakatiya; I.Z.: 14th January, 1981.

Volleyball (W): N.Z. & I.Z.: Gurunanak Dev; S.Z.: Kerala Agril; I.Z.: 27th November, 1980.

Games on Four-Zone Basis

Badminton (M & W) : N.Z.: Guru Nanak Dev (W); E.Z. & I.Z.: Gorakhpur; S.Z.: Kerala; W.Z.: Marathwada; I.Z.: 29th August, 1980.

Basketball (M): N.Z.: Panjab; E.Z.: Burdwan: S.Z.: Madurai Kamaraj; W.Z. & I.Z.: Vacant; I.Z.: 1st December, 1980.

Cricket (M): N.Z.: Vacant; E.Z.: Bhagalpur; S.Z.: Vacant; W.Z. & I.Z.: Udaipur; I.Z. : 12th January, 1981.

Football : N.Z: Garhwal; E.Z. APS Rewa; S.Z. Andhra; W.Z. & I.Z., Vikram; I.Z.: 22nd October.

Hockey (M): N.Z.: PAU; E.Z.: Sambalpur; S.Z.: Madurai Kamaraj; W.Z. & I.Z.: Indore; I.Z.: 8th January, 1981.

Volleyball (M) : N.Z.: Punjabi; E.Z. & I.Z.: BHU; S.Z.: Kerala; W.Z.: K.K.V., Dapoli; I.Z.: 1st November, 1980.

Games on All-India Basis

Athletics (M&W): Vacant: 28th December, 1980.

Ball Badminton (M) : Bangalore; 21st January, 1981.

Ball Badminton (W) : Bangalore; 21st January, 1981.

Boxing : HAU; 8th January, 1981.

Chess : Nagpur; 1st September, 1980.

Cricket (W) : Osmania; 20th November, 1980.

Cycling : Vacant; 9th January, 1981.

Gymnastics (M&W) and Malkhamb : Vacant; 15th December, 1980.

Hockey (W) : Kurukshetra; 10th December 1980.

Handball (M&W) : Jammu; 26th November, 1980.

Kabaddi (W) : Guru Nanak Dev; 22nd October, 1980.

Kho Kho (M) : Poona; 4th January, 1981.

Kho Kho (W) : Poona; 4th January, 1981.

Rowing : Vacant; 7th January, 1981.

Shooting (M & W) : Vacant; 12th December, 1980.

Squash Rackets : Vacant; 2nd December, 1980.

Swimming, Diving & Water Polo : Calcutta; 1st October, 1980.

Tennis (W) : Vacant; 2nd January, 1981.

Weight Lifting & Best Physique : Vikram; 21st December, 1980.

Wrestling : Nagpur; 8th November, 1980.

N.Z.: North Zone
E.Z.: East Zone
S.Z.: South Zone
W.Z.: West Zone
I.Z.: Inter-Zonals
Vacant: Venue yet to be decided.

PANJAB UNIVERSITY
CHANDIGARH

Corrigendum to Advertisement No. 12/80

(Published on page 491)

For the post of Editor in Hindi in the Department of Hindi, the desirable qualifications are as under:

1. Experience of editing work in Hindi manuscripts written in Gurumukhi script.
2. Sound knowledge of medieval Hindi Literature.
3. Knowledge of Sanskrit and Punjabi Languages.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Mehta, Shalina. Hindu-Muslim relationships in Delhi : A study of identity maintaining mechanism. University of Delhi.

Psychology

1. Indira, S.N. Mid life crisis : A psycho-social study of menopause. Bangalore University.

Sociology

1. Bimoria Rani, Marisetty. Female criminality in Andhra Pradesh. Andhra University.
2. Shah, Kalpana Ghanshyambhai. Voluntary organization and women's liberation : A case study of Akhil Hind Mahila Parishad. South Gujarat University.
3. Singh, Madhu. Social origins, educational attainments and occupational mobility among scheduled castes in Delhi. Jawaharlal Nehru University.

Political Science

1. Sinha, Pandey Gajendra Narain. Development of socialistic trends in the Indian National Congress, 1920-1947. Magadh University.
2. Tahmores, Kiumarsi. Foreign policy of Iran, 1962-1972. University of Poona.

Economics

1. Agarwal, Shama. A critical study of forest industries in Uttar Pradesh with special reference to Meerut and Garhwal region. Meerut University.
2. Bhatt, Pankaj Kedarnath. Growth of entrepreneurship in South Gujarat. South Gujarat University.
3. Mehta, Sudha. Swatantrata ke pashchat Madhya Pradesh ka udyogik vikas. University of Indore.
4. Sudama Singh. Cost benefit analysis of investment in fertilizer industry : A case study of Bhatinda Project. University of Rajasthan.

Law

1. Singh, Parmanand. Protective discrimination in favour of backward classes in the field of public services. University of Delhi.

Public Administration

1. Dubey, Shashi. Madhya Pradesh mein janswasthya sevaon ka prabandh 1956-73. University of Indore.
2. Umamaheswar, Arcot Ramachandran. State industrial development corporations. South Gujarat University.

Education

1. Agarwala, Braj Bhushan. A study of the development of educational policy in British India from 1854 to 1899. University of Delhi.
2. Joseph, T.T. A study of some predictors of achievement in chemistry at the pre-degree level. University of Kerala.
3. Muenchana, P.M. Rangchai. A study of adjustment of the Thai students in Indian universities. University of Indore.
4. Narayana, T.V. Study of performance levels of candidates appearing at the Andhra Pradesh Public Service Commission examinations conducted during 1962-1978 in relation to the candidates' caste, age and educational background. Karnatak University.

Commerce

1. Agarwal, Gyan Prakash. Government regulation of multinational corporations in India. University of Delhi.
2. Dharmawat, Basanti Lal. Mobilisation of rural deposits by commercial banks in Rajasthan. University of Udaipur.
3. Jacob, A.S.J. Economics of mechanization in the dry areas with special reference to Ahmednagar District. University of Poona.
4. Khanna, Sri Ram. Export marketing of non-traditional items. University of Delhi.
5. Ram Prakash. Need for analysis of market segmentation for guiding marketing strategy of electrical cable (P.V.C.) Industry : A case study of electrical cable (P.V.C.) Industry in small scale sector at Ghaziabad. Meerut University.
6. Sarkar, Jyotibikas. An analysis of the nature and changes of the capital structure of the central government companies—1960-61-1969-70. University of Calcutta.

HUMANITIES

Literature

English

1. Parasher, S.V. Certain aspects of the functions and form of Indian English : A sociolinguistic study. C.I.E.F.L., Hyderabad.
2. Pati, Madhusudan. Indian classical drama in the light of Western dramatic criticism. Sambalpur University.

German

1. Fenn, Bernard. A study of the characterisation of women in the plays of Bertolt Brecht. University of Kerala.

Hindi

1. Braj Raj Kishore. Shakespeare aur Prasad kee natyakala ka tulanatmak adhyayan. University of Delhi.
2. Gupta, Manjulata. Rajasthan ka swatantryottar Hindi gadya sahitya. University of Rajasthan.
3. Masuti, Umarsab Rajesab. Dinakar : Vyaktitv aur krititv. Karnatak University.
4. Naval, Harish Kumar. Rangmanch ke sandarbh mein Hindi natya prayog. University of Delhi.
5. Sagar, Ram Singh. Rasleen aur unka sahitya. South Gujarat University.
6. Saini, Swaraj. Satven dashak kee Hindi kavita mein yugchetna. S.N.D.T., Women's University, Bombay.
7. Shashi Rani. Ritimukt kaviyon kee aprastut yojana, 1650-1850. University of Delhi.

Urdu

1. Jane Alam. Debistan-e-Wahshat ka tanquidi mutalah. University of Calcutta.

Bengali

1. Bhattacharyya, Ranjit Chandra. Tripurar Raj-Amaler Bangla sahitya. University of Calcutta.
2. Chattopadhyay, Bhaktimadhab. Prachin Bangla gadya. University of Calcutta.
3. Das, Tapendra Narayan. Madhyajuger Bangla sahitye aitihas chetana. University of Calcutta.

Gujarati

1. Sheth, Usha. Rishabhdasni sahityopasna. S.N.D.T. Women's University, Bombay.

Malayalam

1. Prasannamony, V. Treatment of Nala story in Malayalam with special reference to Nagacaritam Attakkatha, Nalacaritam Attakkatha, Nalacaritam Tullal and Naisadham Campus. University of Kerala.

Marathi

1. Kulkarni, Prabhakar Vishwanath. Vishnushastri Chipalunkar : A study. Karnatak University.

Oriya

1. Deb, Achintya Kumar. Comparative study of Oriya and Bengali Vaishnava poets, 16 century A.D. Utkal University.
2. Mohanty Sarada Kumari. Sadananda Kavisurya Brahma : Ek adhyayan. Utkal University.

3. Singh, Brahmananda. Aupanyasika Gopinath. Berhampur University.

Telugu

1. Lakshmi, P. Important women characters in Ramayana Kalpavrikshamu. Kakatiya University.

2. Suryaprakasa Rao, Josyula. A critiquie on Bhatta Mallikarjuna's Ramayana. Andhra University.

Geography

1. Jamil, Mohammad Iqbal. Spatial industrial pettern in metropolitan areas: Experiences and planning prospects of Delhi. I.I.T., Kharagpur.

2. Sambasivarao, Mendu. Geomorphology and evaluation of the Modern Godavari Delta. Andhra University.

3. Tripathi, Umesh Chandra. Gwalior Tahsil : A study in utilization of agricultural land resource. Meerut University.

History

1. Duah, Francis Boakye. African cultural heritage and problems of museums and monuments in Africa, South of Sahara and Ghana : A case study. University of Delhi.

2. Lakshmi Chander. The Sharqi Kingdom of Jaunpur, 1394-1495 A.D. : A political and cultural history. University of Delhi.

3. Mishra, Dadhibaban. History of Orissa in the seventh century A.D. Sambalpur University.

4. Sukhwal, Laxmi. British Sovereignty in India, 1858-1885 A.D. University of Udaipur.

5. Venkatesan, G. Development of rural local self-government in Madras state, 1920-50: A study. Sardar Patel University.

6. Vidyarthi, Shambhu Shankar Thakur. Prachin Mithila mein shikshan. K.S. Darbhanga University.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from Periodicals received in AIU library during August, 1980

EDUCATIONAL PSYCHOLOGY

Anand, S.P. "Job satisfaction versus work-role variables." *Indian Educational Review* 14 (4); Oct 79 : 106-17.

Fagin, L.H. "The experience of unemployment." *New Universities Quarterly* 34(1); Winter 79/80: 48-74.

Prasad, Vandana. "Promotion of creativity and achievement by discovery method." *Indian Educational Review* 14(4); Oct 79: 86-94.

EDUCATIONAL SOCIOLOGY

Aitken, Robert. "Schools, unemployment and the work ethic." *New Universities Quarterly* 34(1); Winter 79/80: 93-107.

Krishan, Kumar. "The social culture of work: Work, employment and unemployment as ways of life." *New Universities Quarterly* 34(1); Winter 79/80: 5-28.

EDUCATIONAL PLANNING

Azad, J.L. "Sixth Plan: Priorities in educational development." *University News* 18(12); 15 June 80: 326-8,340.

Safaya, Raghunath. "Priorities in educational planning." *University News* 18(14); 15 July 80: 379-81.

EDUCATIONAL ADMINISTRATION

Bare, Alan C. "The study of academic department performance." *Research in Higher Education* 12(1); 1980; 3-22.

Chait, Richard. "Academic management : What it should be" *New Directions for Higher Education* 7(4); 1979: 35-48.

Indiresan, P.V. "Functioning of IITs." *University News* 18 (15); 1 Aug 80: 405-6.

Lawrence, Ben. "Accountability information: Progress, pitfalls and potential." *New Directions for Higher Education* 7(4); 1979: 51-66.

Lockwood, Geoffrey. "Managing to make ends and means meet". *Times Higher Education Supplement* (406); 8 Aug 80:9.

Prasad, K.N. "Maintenance of academic standards in Indian universities." *University News* 18(7); 1 April 80: 165-7.

Rajinder Singh. "Redress of grievances in universities." *University News* 18(15); 1 Aug 80: 409-12.

TEACHING

Bhardwaj, G.N. "A critical study of the development of teacher education in Rajasthan." *Indian Educational Review* 14(4); Oct 79: 66-72.

EDUCATIONAL TECHNOLOGY

Sharma, R.A. and Verma, M.N. "Effect of schedules of reinforcement and extroversion on programmed instruction achievement." *Indian Educational Review* 14(4); Oct 79: 33-42.

EVALUATION

"INTERNAL ASSESSMENT and external examinations." *University News* 18(16); 15 Aug 80: 440, 442.

Kaushik, Shashi Lata and Sharma, Atmanand. "Prediction of success in Bachelor's degree examination in arts, science and commerce," *Indian Educational Review* 14(4); Oct 79: 128-44.

Sharma, Bharat Bhushan. "Experimental verification of various methods of examination in history at the lower and higher stages." *Indian Educational Review* 14(4); Oct 79: 47-53.

ECONOMICS OF EDUCATION

Belanger, Charles H and Larallee, Lise. "Economic returns to schooling decisions". *Research in Higher Education* 12(1); 1980: 20-35.

McLaughlin. Gerald W. etc. "Size and efficiency." *Research in Higher Education* 12(1); 1980: 53-66.

Mouical, David G. "Marginal funding: A difference, that makes a difference ?." *Research in Higher Education* 12(1); 1980: 67-82.

Patel, S.K. "Education, employment and income inequality: A Marsian perspective." *Indian Educational Review* 14(4); Oct 79 : 13-23.

Peston, Maurice. "Employment, income and education." *New Universities Quarterly* 34(2); Spring 80: 229-34.

ADULT EDUCATION

Cohen, Lionel. "The Dutch OU: Second chance or second best." *Times Higher Education Supplement* (402); 11 July 80: 8.

Cross, K. Patricia. "Responding to learning needs," *New Directions for Higher Education* 7(4); 1979: 13-28.

Dale, Shiela M. "Another way forward for adult learners: The public library and independent study." *Studies in Adult Education* 12(1); Apr 80: 29-38.

Dube, S.C. "Adult education programme: A misdirected endeavour." *University News* 18(16); 15 Aug 80: 441-2.

Luckham, Bryan. An enlargement of vision: The university response." *New Universities Quarterly* 34(1); Winter 79/80: 108-19.

Subba Rao, D. "Role of universities in extension and community service." *University News* 18(16): 15 Aug 80: 438-9.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

Kerr, Clark. "Key issues for higher education in the 1980s." *New Directions for Higher Education* 7(4); 1979: 1-11.

Laha, P.N. "University education in India: Past and present" *University News* 18 (14); 15 July 80. 382-5.

Muller, Steven. "Labour value in Yugoslav universities." *Times Higher Education Supplement* (406); 8 Aug 80:23.

"UNIVERSITIES IN crisis (Editorial)" *New Quest* (21): May-June 80: 135-6.

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PANJAB UNIVERSITY CHANDIGARH

Advertisement No. 12/80

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, alongwith postal order for Rs. 10/- by **10-9-1980**. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

POSTS, SCALE OF PAY AND QUALIFICATIONS

1. PROFESSORS

(Rs. 1500-60-1800-100-2000-125/2-2500)
(Public Administration-1, History-1, English-2)
(For one post American Literature preferred).

Qualifications : Essential

(a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject with bright academic record.
(b) Either a research degree of doctoral standard or published research work of high standard in journals of repute,
(c) About 10 years' experience of teaching Post-Graduate classes and/or research, and
(d) Experience of guiding research at Doctoral level.

OR

An outstanding Scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

NOTE: For Professor of Public Administration
Candidates in Allied fields could also apply.

2. READERS

(Rs. 1200-50-1300-60-1900)
(Indian Theatre-1, Ancient Indian History, Culture & Archaeology-1, Economics-1, French-1, Hindi-1, History-1 (Middle Eastern Studies), Punjabi-2 (Permanent-1, Temporary-1), Philosophy-1, Political Science-1, Sanskrit-2, Sociology-1 (Temporary but likely to be permanent), Tamil-1 (South Indian Languages Deptt.), Statistics-2 (Permanent-1, Temporary-1, Leave vacancy).

3. EDITOR IN HINDI

(Rs. 1200-50-1300-60-1900)
(Deptt. of Hindi)

Qualifications for Readers (All Posts) and Editor in Hindi

Essential

(a) A first or high second class Master's degree of an Indian University or an equivalent qualifications of a foreign University in the relevant subject with bright academic record.
(b) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute,
(c) About five year's experience of teaching post-graduate classes and/or research; and
(d) Competence to guide research.

Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification.

Reader in Indian Theatre
Essential

1. A first or high second class Master's degree (in any subject) of an Indian University or an equivalent qualification of a foreign University.
2. Experience of (a) acting
or (b) directing
or (c) producing
or (d) play-writing.

Desirable

(i) A research degree (any subject) of a doctoral standard or published research work of high standard in journals of repute.
(ii) About five years' experience of teaching post-graduate classes at a University or College level and experience of guiding research.
(iii) Graduate of the National School of Drama, New Delhi, or Diploma holder in the Indian Theatre from any of the recognised and well-known universities.
(iv) Sound background in the Indian classical and Folk Theatrical Traditions and research in a field of Indian Theatre.
(v) Production/Participation in Radio/T.V. Plays.

Desirable

Reader in Economics

Strong background in Mathematics and Statistics.

Specialisation in Econometrics, Mathematical Economics and/or in any important area of Economic Theory.

Reader in Hindi

(a) Medieval Poetry
(b) Poetics/Linguistics/Modern Literature
(c) Knowledge of Sanskrit or English.

Reader in Punjabi under the Development of Area Studies Programme (Permanent)

(a) Has done some written work in the language of the area on different aspects of the Language/Literature/Culture of the Area of Pakistan.
(b) Has working knowledge about the development of Society and Culture and also contemporary development in the concerned region.
(c) Capability of making depth study on inter-disciplinary basis.

Reader in Philosophy

Specialisation in Indian Philosophy or Logic.

Reader in Political Science
Specialisation

Either in International Politics or Political Theory or Comparative Politics or Indian Political Systems.

Reader in Sociology

Sociology of medicine/Sociology of art and literature/Sociology of development/Sociology of social inequality.

Reader in Tamil

(a) Minimum of 7 years teaching experience upto Diploma Level to non-Tamils through English.
(b) Innovation in the method of teaching Tamil to Non-Tamils.
(c) Sound knowledge of Tamil Grammer.
(d) Diploma in a Foreign Language and knowledge of Hindi/Punjabi.

Reader in Statistics

(i) Field of Research Specialisation being Design of Experiments, Sampling Multivariate Analysis. Operation Research or Econometrics.
(ii) Broad post M.A. Training in Advanced inference, Probability, Multivariate Analysis, Design of Experiments, Sample Survey; Econometrics and O.R.

4. LECTURERS

(Rs. 700-40-1100-50-1600)
(English-2,Economics-1 (Temporary but likely to be permanent), German-1, Gandhian Studies-1, Hindi-1, History-3, Psychology-2, Kannada-1 (Deptt. of South Indian Languages), Mass Communication-2 (Permanent-1, Temporary-1).

Qualifications

(a) A Doctor's degree or research work of an equally high standard; and
(b) Consistently good academic record with first or high second i.e. 55% marks or more (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing inter-disciplinary programmes the degree in (a) and (b) above may be in relevant subject. The consistently good academic record at Pre-Master's level would be interpreted as an average of 50% or above at the two examinations prior of Master's examination.
(c) Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications prescribed in (b) above.
Provided further that if a candidate possessing a Doctor's degree

or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research Laboratory/Organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fufils these requirements.

Lecturers in Mass Communication
Qualifications

(i) Consistently good academic record with a first or high second class Master's degree in the subject (Communication/Mass Communication/Journalism etc.) from an Indian University or an equivalent qualification from a foreign University.

OR

(ii) A first or high second class Master's degree in Social Sciences/Sciences/Humanities with at least a second class Bachelor's degree or Diploma in Journal ism from a recognised Indian University/Post-Graduate Diploma from a recognised National Institute.

Desirable

(i) Teaching experience at college or University level.
(ii) Work experience in any area of Mass Communication (Newspaper/Magazine, News Agency, Public Relations, Advertising Radio or T.V. Journalism etc.)

Specialisation

Research Methodology in Communication or Development/Rural Communication.

Desirable
Lecturer in German

(i) Training in Audio-visual Aids in teaching German.
(ii) Teaching experience at the University level.

Lecturer in Gandhian Studies

Ability to teach Gandhian Thought.

Lecturers in Psychology

For post No. 1 : Specialisation : Child Psychology (Rural)
For post No. 2 : Specialisation in order of priority :
(a) Clinical Psychology
(b) Personality
(c) Physiological Psychology.

Lecturer in Kannada

Experience of teaching Kannada to non-Kannada people through English, Knowledge of Hindi/Punjabi.

P.U. Evening College, Chandigarh
Lecturers
(Political Science-1, Public Administration-1)
Qualifications

(i) A consistently good academic record with at least 1st or high second class i.e. 55% marks or more (B in the seven point scale) at the Master's degree in a relevant subject or an equivalent degree of a foreign University. The consistently good academic record at Pre-Master's level would be interpreted as an average of 50% or above at two examinations prior to Master's examination.

(ii) An M. Phil. degree or a recognised degree beyond the Master's level or published work indicating the capacity of a candidate for independent research.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications prescribed in (i) above.

Provided further that if a candidate possessing the qualifications as at (ii) above is not available or not considered suitable the University, on the recommendation of the Selection Committee may appoint a person possessing a consistently good academic record on the condition that he will have to obtain an M. Phil. degree or a recognised degree beyond the Master's level within five years of his appointment, failing which he will not be able to earn future increments till he obtains that degree or gives evidence of equivalent published work of high standard.

5. RESEARCH ASSISTANTS-2
(Rs. 550-20-650-25-750)
(Department of Commerce & Business Management)

Qualifications

Consistently good academic record with 1st/high 2nd class (55 per cent marks or more) in the Master's degree in Personnel Management & Industrial Relations/MBA with specialisation in Personnel Management/Diploma in International Trade with MA in Economics/M.Com. or MBA with International Marketing.

6. INSTRUCTOR—1
(Rs. 550-20-650-25-750)
(Department of Statistics)

Qualifications

Consistently good academic record with 1st or high second class i.e. 55% marks or more in the Master's degree in the relevant subject.

Candidates for the posts of Professor and Readers who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work. 15 posts of Lecturer will be reserved for the members of the scheduled castes and 2% for the members of the Scheduled Tribes, but these will be filled up by others if no suitable Scheduled Castes/Scheduled Tribes applicant is available.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained. Attested copies of certificates in support of qualifications for Matriculation/Schoolleaving, Graduation as also post-graduate examinations be attached to the application. Serving employees, may, however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Department. They will be allowed to present themselves for interview only on the production of 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs 2/- or by making a written request to the Finance & Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23 x 10 cms and postal order for Rs. 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

JAWAHARLAL NEHRU UNIVERSITY

Advt. No. Aca. III/8/80

Applications are invited for the following posts :

I. SCHOOL OF SOCIAL SCIENCES:
Centre for the Study of Social Systems

1. Assistant Professor
Essential Qualifications

(a) Consistently good academic record with at least a high second class Master's degree in Social Science or its equivalent qualification from an Indian/Foreign University;
(b) A doctor's degree or published work of an equally high standard in Sociology/the relevant area of specialization; and
(c) Specialization in one or more of the following areas : Sociology of Education, Sociology of Occupations and Professions, Population and Society.

Desirable

Experience of teaching post-graduate classes for at least 2 to 3 years.

II. SCHOOL OF LANGUAGES
Centre of German Studies

2. **Assistant Professor in German** (temporary against leave vacancy for about two years)

Qualifications : Essential

(a) Consistently good academic record with at least a high second class Master's degree in German or its equivalent qualification from an Indian/Foreign University; and
(b) A doctor's degree or published work of an equally high standard.

Desirable

(i) Graduation in Science or Technology; and
(ii) At least ten years of technical translation experience from German into English with a reputed organisation.

Provided that in the case of Assistant Professors if the Selection Committees are of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualification prescribed in (a) above.

Provided further if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Ph.D. degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

3. **Lady Medical Officer**
   (Leave vacancy for about one year) The post is reserved for Scheduled Caste candidate but in the event of no Scheduled Caste candidate being found suitable the post will be filled up from general category.

Qualification: Essential

A good M.B.B.S. or equivalent Medical degree recognised by the Indian Medical Council.

Experience

Lady Medical Officer with 2 to 5 years experience; experience of handling emergencies in general practice and experience in handling obstetric an gynaecological problems.

Desirable

House Job and/or Residentship in Obstetrics and Gynaecology.

P.G. Diploma/Degree in Obstet. and Gynae & Administrative experience.

Accommodation

She will be required to stay on the Campus subject to availability of accommodation.

Scales of Pay

1. **Assistant Professor**
   Rs. 700-40-1100-50-1600.
2. **Lady Medical Officer**
   Rs. 700-40-900-EB-40-1100-50-1300 plus non-practising allowance.

Relaxation in any of the qualifications may be made(a) in favour of persons of eminence or of high academic professional distinction and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centre of studies.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to Scheduled Caste/Scheduled Tribe at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route.

Applications separate for each post, on the prescribed form; obtainable free of cost from the Section Officer (Academic Branch-III) of the University by sending him a self-addressed and stamped envelope (affixing Postage stamps worth Rs. 2.85) of 23 cm x 10 cm. size, should reach the Deputy Registrar (Academic), Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, latest by **25-9-1980**

Candidates from abroad, applying for the faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth, marital status, nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate.

SAMBALPUR UNIVERSITY
JYOTI VIHAR, BURLA
SAMBALPUR

Pin Code : 768017

Advertisement No. 11165/Estt. —II
Dated the 9th Aug. '80.

POSTS VACANT : Lecturers in Electrical Engineering (Two), Electronics & Telecommunication Engineering (Five), Mechanical Engineering (Four) Mathematics (One)

Scale : Rs. 700-40-1100-50-1600/- with usual D.A., A.D.A., C.P.F. and gratuity benefits.

Qualifications

(a) For posts other than lecturer in Mathematics consistently good academic record with Master's degree in the appropriate subject with B+ grade or 55% marks essential. Industrial and/or research experience desirable. Doctorate degree or published work of equal standard preferable. (In case suitable candidates with above essential qualification are not available, candidates with First Class Bachelor's degree and good academic career may be appointed on condition that they have to obtain Master's degree in Engineering within five years otherwise no future increment will be granted until essential qualifications are obtained).

(b) For post of lecturer in Mathematics—consistently good academic carreer with at least Second Class Master's or equivalent degree with B+ grade or 55% marks and a doctorate degree or equivalent published work essential (In case no suitable candidate with doctorate degree or equivalent published work is available, candidate with good academic career may be appointed on the condition that he will obtain a doctorate degree or publish equivalent publications of high standard within five years otherwise no future increments will be granted until essential qualifications are obtained.

Procedure of application

Seven copies of the application form alongwith other details obtainable from the University Office on payment of Rs. 15/- in person or by post through crossed postal order only payable to Finance Officer, Sambalpur University with a self addressed envelope (23 x 10 cm.) with postage stamps worth Rs. 3.30 affixed and the words "Application for teaching Posts" superscribed on it. Candidates already in employment must send a copy of the application through the employer.

Last date for receipt of application is **10-9-1980**.

B.B. Tripathy
REGISTRAR

PANJAB UNIVERSITY
CHANDIGARH

Advertisement No. 13/80

Applications are invited for the following posts so as to reach the Registrar, Panjab University, Chandigarh, alongwith postal order for Rs. 10/- by **September 10, 1980**. Fourteen days extra time is permissible to the persons who have to submit their applications from abroad.

Posts, Scale of Pay and Qualifications

1. **PROFESSORS**
   (Grade : Rs. 1500-60-1800-100-2000-125/2-2500)
   Bio-chemistry-1, Function Theory, Number Theory, Modular Forms, Algebra, Geometry and Related subjects-1 (Department of Mathematics). Analysis-1 (Centre of Advanced Study in Mathematics).
   PROFESSORS/READERS —5
   Centre of Advanced Study in Mathematics
   Numerical Analysis-1; Function Theory, Number Theory, Modular Forms, Algebra, Geometry and Related subjects-4.

Qualifications : Essential

(a) A first or high second class Master's degree of an Indian University or an equivalent qualifications of a foreign University in the subject with bright academic record;
(b) Either a research degree of doctoral standard or published research work of high standard in journals of repute;
(c) About 10 years experience of teaching post-graduate classes and/or research; and
(d) Experience of guiding research at Doctoral level.

OR

An outstanding Scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

2. **READERS**

(Grade : Rs. 1200-50-1300-60-1900) Geology-1 (Himalayan Geology), Pharmaceutical Sciences-2 (Pharmaceutics-1) (Pharmaceutical Chemistry-1, temporary, leave vacancy), Microbiology-3 (Immunology-1, Microbiology-2, permanent-1, temporary, leave vacancy-1), Zoology-1 (temporary, but likely to be permanent), Chemistry-4 (Analytical Chemistry-1, Inorganic Chemistry-2, temporary, leave vacancy-1, temporary, but likely to be permanent-1, Physical Chemistry-1 temporary, leave vacancy), Bio-physics-1, Physics-4 temporary, leave vacancies. Centre of Advanced Study in Mathematics-1 (Analysis).

Qualifications : Essential

(a) A first or high second class Master's degree of an Indian University or an equivalent qualifications of a foreign University in the relevant subject with bright academic record.

(b) Either a research degree of doctoral standard or published research work of high standard in the subject concerned in journals of repute.

(c) About five years experience of teaching post-graduate classes and/or research; and

(d) Competence to guide research.

Evidence of being engaged in making innovation in teaching methods and production of standard teaching material, will be an additional qualification.

Essential/Desirable

For the post of Reader in Microbiology (Immunology)

M.Sc. in Microbiology/M.V.Sc., M.B.B.S., Ph.D., M.D. Microbiology with specialisation in Immunochemistry, Immuno-pathology or Clinical Microbiology-Immunology.

Research and Teaching experience in the subject of Immunology/Clinical Microbiology/Immunopathology.

For the post of Reader in Microbiology

M.Sc./M.V.Sc./M.B.B.S./Ph.D./M.D. in Microbiology.

Experience in the area of Molecular genetics, Fermentation technology or Microbial Toxicology.

For the post of Reader in Bio-physics

Specialisation in Cell Biology; Molecular Biology; Quantum Biology; Radiation Bio-physics.

3. **LECTURERS**

(Grade : Rs. 700-40-1100-50-1600) Bio-physics-1, Bio-chemistry-2, Pharmaceutical Sciences-2 (Pharmacognosy, temporary, leave vacancies), Geology-2 (temporary, leave vacancy-1), Chemistry-2, (Inorganic Chemistry-1 temporary, but likely to be permanent, Organic Chemistry-1 temporary, leave vacancy), Lecturer-cum-Microanalyst-1 (temporary leave vacancy) Zoology-2 (temporary, leave vacancies), Microbiology-3 (Virology or Protozoology-1, temporary, leave vacancies-2), Lecturer-cum-Curator-1.

Qualifications

(a) A Doctor's degree or research work of an equally high standard, and

(b) Consistently good academic record with 1st or high second class i.e. 55% marks or more (B in the seven point scale). Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing inter-disciplinary programmes, a degre in (a) and (b) above may be in relevant subjects. The consistently good academic record at pre-Master's level would be interpreted as an average of 50% or above at the two examinations prior to Master's examination.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of a very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a doctor's degree or equivalent research work is not available or is not considered suitable a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

Desirable

For the Post of Lecturer in Bio-physics

Medical Physics/Animal Physiology/Neurobiology).

For the posts of Lecturers in Bio-Chemistry

Bio-Physical Chemistry/Molecular Biology/Plant Bio-chemistry/ Biochemical techniques including tissue culture/Metabolic regulation.

For the posts of Lecturers in Geology

Mineralogy & Petrology or equivalent degree of a foreign University.

Lecturer in Microbiology

Virology, Protozoology, Tissue Culture or Molecular genetics.

Lecturer-cum-Microanalyst

Essential

(i) A doctoral degree in the subject of Chemistry.

(ii) Consistent good academic record with first or high second class Master degree in the subject of Chemistry.

Desirable

Working knowledge of Microanalysis of Carbon, Hydrogen and Nitrogen.

Lecturer-cum-Curator (Microbiology)

Essential

(i) M.D./Ph.D. in Microbiology.

(ii) Specific experience in the maintenance of cultures and taxonomy and preservation of all types of micro-organisms.

(iii) Teaching and research experience in the area of systematic bacteriology, biotechnology and or bioengineering.

Candidates for the posts of Professors and Readers who do not possess a doctoral degree are required to submit 10 typed/cyclostyled copies of brief resume of their published work. 15% posts of Lecturers will be reserved for the members of the Scheduled Castes and 2% for the members of the Scheduled Tribes, but these will be filled up by others if no suitable Scheduled Castes/Schedules Tribes applicant is available.

Persons already in service should route their applications through proper channel. Incomplete forms and those received after the due date will not be entertained.

Attested copies of Certificates in support of qualifications for Matriculation/School leaving, graduation as also post-graduate examinations be attached to the application.

Serving employees, may however, send their applications on the prescribed proforma, direct to the University. They may route another copy through their Departments. They will be allowed to present themselves for intervew only on the production of a 'No Objection Certificate' from their employers. Canvassing in any form will disqualify the candidate.

Application forms can be obtained from the Cashier, Panjab University, Chandigarh, personally on payment of Rs. 2/- or by making a written request to the Finance & Development Officer, Panjab University, Chandigarh, accompanied by self-addressed stamped envelope of 23 x 10 cms and a postal order for Rs 2/- drawn in favour of the Registrar, Panjab University, Chandigarh.

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

Advertisement No. 22/80

Applications are invited to fill up two posts of Assistant Professor/Lecturer in the Department of Aeronautical Engineering in the Institute in the pay scales noted against each :

Assistant Professor— Rs. 1200-50-1300-60-1900

Lecturer —Rs. 700-40-1100-50-1600.

The Department is seeking individuals with ability and aptitude for teaching in undergraduate/postgraduate programmes, research and development in any of the areas of specialisations mentioned below. The Department has an energetic and young faculty and is actively involved in sponsored research and development projects funded by Governmental agencies and industry.

Areas of Specialisation

1. Aircraft structural design/random vibration experimental stress analysis.
2. Gas turbines/aircraft propulsion.

Qualification and Experience

Assistant Professor

Doctorate degree with good academic record and atleast three years of professional experience outside the work for the degree.

OR

In special cases, M. Tech with good academic record and atleast seven years of industrial/research and development experience outside the work for the degree.

The candidate must have demonstrated ability in teaching and independent research work as envisaged by adequate number of research publications of good quality in journals of repute or developmental work of merit in any one of the aforesaid areas of specialisations.

Lecturer

Doctorate degree with good academic record and adequate research experience resulting in research papers of good quality.

OR

M. Tech. with good academic record and atleast three years of teaching research/industrial experience with good record outside the work done for degree.

The candidates must have ability for good teaching and independent research evidenced by adequate publications or developmental work in any one of the aforesaid areas of specialisations.

For Both the Positions Basic Degree in Respective Branch of Engineering is Required.

The Institute has well equipped laboratories and also Biosystems Laboratory, Laser Laboratory, besides central facilities. There is well established Computer Centre having DEC 10, IBM 1800, PDP-1 Systems with interactive graphic terminals and TDC-316, and a group of experienced programmers. The Institute has a well stocked library with more than 2,17,000 volumes and 1800 periodicals. The Central facilities included 2 MeV Van de Graaff accelerator, 4096 multichannel analyser and other radiation detection equipment, liquid nitrogen and spectrometers, glass blowing shop, crystal growth facility, central instrumentation laboratory, precision machine shop, electron microscope besides a large workshop for fabrication of specialised research apparatus.

There is an Advanced Centre for Electronic Systems in the Institute attached to the Department of Electrical Engineering. The Centre carries out unclassified research and development work in the areas such as Communicaton, Radar, Signal and Image processing and instrumentation systems sponsored by Governmental agencies and industry. Besides, an advanced Centre for Materials Science has been established recently at the Institute by the Government of India to undertake research in the frontiers of development on materials of national importance.

The Campus facilities include a Primary and Higher Secondary School, a Health Centre and a Shopping Centre.

The posts are permanent and carry retirement benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme, as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

In the category of Lecturer one post will be reserved for SC/ST candidate. In the event of non-availability of suitable SC/ST candidate, the reserved post would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm x 10 cm size. Application should be accompanied by a postal order for Rs. 7.50 (Re. 1.87 for SC/ST candidate).

Applicants who are employed in a Government/Semi-Government organisation or Institution should send their applications through proper channel, else they will be required to produce a 'No Objection Certificate' from their employers at the time of interview.

Applicants from abroad may apply on plain paper enclosing a complete biodata and names of three referees from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, I.I.T. Post Office, Kanpur-208016, U.P. (India) on or before **September 20, 1980**.

UNIVERSITY OF NORTH BENGAL

Advt./19/R-80 **dt. 11-8-80**

Applications n prescribed forms are invited for the ifollowing posts, viz :

(a) **Reader in Physics** : (post one against leave vacancy but likely to continue) in the scale of pay of Rs 1200-50-1300-60-1900/- with allowances and other benefits as per University Rules (Specialisation in Theoretical Solid State Physics).

(b) Lecturers

- (i) Geography and Applied Geography (post one) Specialisation in Pedology (preferably with science background)/Settlement Geography (Rural)/Ecology and Environmental Conservation.
- (ii) Political Science (posts two—one against leave vacancy)
- (iii) Philosophy (post one)—Specialisation in Political or Social Philosophy and/or Phenomenology and Existentialism in the scale of Rs. 700-40-1000-50-1600/- with allowances and other benefits as per University Rules.

Minimum qualifications for posts A and B :—(a) A Doctor's degree or published research work of an equally high standard, and (b) consistently good academic record with Ist or high Second class (B in the seven point scale) Master's degree in the relevant subjects or an equivalent degree of a foreign University.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Additional requirements for post A : (a) evidence of being actively engaged in (i) research or (ii) innovation in teaching methods, or (iii) production of teaching materials; (b) above 5 years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. The qualifications may be relaxed as per directives of the University Grants Commission.

Choice of Selection Committee may not necessarily be confined to those who apply formally. No applications except in prescribed application forms may be considered.

Prescribed application forms may be obtained from the office of the Registrar personally on payment of Re. 1/- in cash at the University cash counter or by sending a self addressed stamped Rs. 1.20 (one rupee and twenty paise envelope of 25 cm x 13 cm wih crossed Indian Postal Order of Re. 1/- in favour of the University of North Bengal. Filled in application forms (6 six) copies must reach the office of the Registrar, P.O. North Bengal University, Dt. Darjeeling Pin: 734430 within 21 **days from the date of publication of this notification.**

REGISTRAR

UNIVERSITY OF ROORKEE

ROORKEE (U.P.)

Corrigendum to Advertisement No. EST (A)/16/7/80 dated 1-7-1980.

1. Earthquake Engineering Department

(a) The Specialization for the post of Professor be read as "Soil and Rock Dynamics and Foundation under Seismic Conditions" instead of Soil Dynamics.

(b) The Specialization for the post of Reader be read as "Engineering Seismology and Tectonics" instead of Seismology.

2. Architecture and Planning Department

The qualifications for the post of Reader be read as under instead of the qualifications already advertised :

(a) READER IN ECOLOGY—One (R)

Qualifications: Essential

(i) Master's Degree/or equivalent qualification with good academic record.

(ii) Seven years experience of teaching/research/profession in the appropriate field with at least two years in teaching/research.

(b) READER—One(R) + Two(TLR)

Qualifications Essential

(i) A Master's Degree or equivalent qualification with any one of the following specializations :— Architecture, Building, Urban Design, Tropical Architecture, Architecture Engineering, Landscape Architecture, Housing, Environmental Planning and Design and Town and Country Planning.

(ii) Seven years experience of teaching/research/profession in appropriate field with at least two years in teaching/research.

O.N. Chaturvedi
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

BOMBAY

Advertisement No. A/4/80

Applications are invited for the following posts in the Centre of Studies in Resources Engineering (CSRE), IIT—Bombay. The posts are tenable for a period of 5 years in the first instance but likely to continue. The staff appointed in the CSRE will be entitled to the same service benefits as are applicable to the permanent members of the staff of the Institute. Applicants should give an account of their professional record and list of research publications etc. In case of candidates of exceptional and proven ability, there may be flexibility regarding area of specialisation and formal educational qualifications. If a candidate is not found suitable for the post at (1) below, he may be considered for the position of Sr. Project Engineer/Scientist in the scale of Rs. 1500-60-1800-100-2000.

(1) CHIEF PROJECT ENGINEER/SCIENTIST REMOTE SENSING (6 posts)
Scale : Rs. 2000-125/2-2500

(2) PROJECT /ENGINEER/SCIENTIST REMOTE SENSING (5 posts)
Scale : Rs. 1100-1600

(3) ASSISTANT PROJECT ENGINEER/SCIENTIST REMOTE SENSING (6 posts)
Scale : Rs. 700-1300

Area of Specialisation and Qualifications

For the 6 posts of Chief Project Engineer/Scientist are given below at (a) to (f)

(a) **Application to Computer Image Data Analysis**
Ph.D. in Electrical Engineering or Computer Science, 12 years experience in computer image processing, remote sensing including Sensor Technology and development of data bank. Experience in the analysis of satellite data and use of CCTs will be considered additional qualification.

(b) **Application to Mineral Resources and Earth Science Problems**
Ph.D. in Earth Sciences/Geology/Geophysics. 12 years experience in using remote sensing, imagery and CCT interpretation using computer techniques including aerial photointerpretation.

(c) **Application to Water Resources Problems**
Ph.D. in Hydraulics or Water Resources. 12 years experience in Remote Sensing as applied to Water Resources Problems including Systems analysis.

(d) **Application to Geotechnical Engineering and Land Use Problems**
Ph.D. in Geotechnical Engineering. 12 years experience in the use of remote sensing, photointerpretation, computerised data processing and image analysis to problems in river valley projects, communication systems, coastal and urban developments.

(e) **Application to Photogrammetry and Geodesy**
Ph.D. in Photogrammetry and Geodesy. 12 years experience in the application of remote sensing, imagery analysis using computer in the field of Photogrammetry and Geodesy.

(f) **Incharge of Remote Sensing Application Training Programme**
Ph.D. in any of the fields mentioned above at (a) to (e). 15 years or more experience in application of remote sensing to various engineering and/or Science problems. Experience in teaching/research/development/training programmes necessary. The person has to develop training programme on the lines of the one organised in Water Resources Development Training Centre, Roorkee. He has to interact with agencies like ISRO, SAC, NRSA etc., for organising training programmes/workshops/conferences jointly with other organisations.

For the posts at (2) for the PROJECT ENGINEER / SCIENTIST, candidates having the Masters degree in the appropriate area of specialisation of engineering/science mentioned above at (a) to (c) and (e) with 5 years experience in the relevant area, may be considered. Candidates with a Master's degree in Metallurgical Engineering with 5 years experience in the area of Mineral Beneficiation will also be considered. Ph.D. is preferred.

For the posts at (3) for ASSISTANT PROJECT ENGINEER/SCIENTIST, candidates having the Master's degree in the appropriate area of specialisation mentioned above at (a) to (c) and (e) with atleast 3 years experience in the relevant areas may be considered. In addition, candidates having M.Sc. Mathematics and Statistics with 3 years experience in Digital image processing of remotely sensed data, and candidates having M.Sc. (Agri.) in Soil Sciences and Agricultural Chemistry with 3 years experience in application of remote sensing, imagery analysis using computer may also be considered.

The posts carry allowances such as DA, CCA, HRA as per the rules of the Institute which at present correspond to those admissible to Central Government employees stationed in Bombay. Application should be made on a plain paper, neatly typed, and should reach the Registrar, IIT Powai, Bombay-400076, on or before **20th October 1980**. Applicants should attach a crossed postal order for Rs. 7.50 (Re. 1.88 for SC/ST candidates) payable to the Registrar, IIT-Bombay.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

HUMAYUN NAGAR, HYDERABAD-500028

ANDHRA PRADESH

NOTIFICATION

Applications are invited for the post of Lecturers in the Constituent Colleges of J.N.T. University, Hyderabad in the following faculties :

S.No.	Name of the post	No. of vacancies
1.	Lecturer in Civil Engineering	6
2.	Lecturer in Electrical Engineering	1
3.	Lecturer in Mechanical Engineering	4
4.	Lecturer in Electronics and Communication Engineering	2
5.	Lecturer in Mathematics	1
6.	Lecturer in Physics	1
7.	Lecturer in Humanities	1

Note : 2 posts in Civil Engineering and 1 post in Mechanical Engineering are leave vacancies. Hence appointment to these posts would be made on temporary basis only, and are liable to be terminated on return of the staff members from leave.

(Continued on page 485)

NORTH-EASTERN HILL UNIVERSITY

LOWER LACHAUMIERE, SHILLONG

No. Advt./P-6/80- Dated the 21st August, 1980.

Applications are invited for the following posts in the North-Eastern Hill University.

1. Principal Scientific Officer	(For Shillong)	1 (One)	Rs. 1600-60-1800-100-2000-125/2-2500/-
2. Reader in Commerce	(For Kohima) Campus)	1 (One)	Rs. 1200-50-1300-60-1900/-
3. Reader in English	(For Mizoram Campus)	1 (One)	-do-
4. Reader in Education	(For Kohima Campus)	1 (One)	-do-
5. Lecturer in Commerce	(For Kohima Campus)	2 (Two)	Rs. 700-40-1100-50-1600/-
6. Lecturer in Botany	(For College of Agriculture, Nagaland, Meoziphema)	1 (One)	-do-
7. Lecturer in Education	(For Kohima Campus)	1 (One)	-do-
8. Lecturer in English	(For Pachhunga University College Aizawl).	1 (One)	-do-

Essential Qualifications

Sl. No. 1

B.E. Mechanical engineering with 10 years of experience of maintaining service workshop in reputed multi-disciplinary organization.

OR

M. Tech. in instrumentation Technology with 5 years of experience in service oriented multi-disciplinary workshop.

Sl. No. 2 to 4 :

(a) Good academic record with a doctoral degree or equivalent published work.

(b) Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

(c) Ability to interact with other disciplines.

(d) About five year's experience of teaching and/or research provided that at least three of these years were as Lecturer, or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Sl. No. 5 to 8

(a) A doctoral's degree or research work of a high standard, and

(b) Consistently good academic record with 1st or high 2nd Class (B' in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University. Having regard to the need for developing inter-disciplinary programme, the degree in (a) and (b) above may be in relevant subjects.

Desirable

Sl. No. 1

Job Requirement : The workshop is equipped with H.M.T. pre-selector universal lathe Model A 24. up-1500 speed range 32-140 rpm; IMT cylindrical grinding machine; universal tool and cutter grinder model GTC-28, and other necessary tools required for mechanical workshop. The incumbent will be required to organise the workshop and undertake to design, fabricate, repair and extend service facilities to all the academic and administrative departments of the University. He will interact with the faculty members of the science departments in designing and fabricating work of scientific instruments and components.

The workshop will have an electronic wing furnished with test equipment and there will be an electronic engineer working under P.S.O. to extend repair and service to facilitate all the electronic instruments installed in different departments.

The graphic section of the general workshop includes the job of preparing graphs and traces of scientific materials and providing their ammonia prints.

The glass blowing laboratory is currently under Chemistry Department and the job requirement of various science departments will be co-ordinated by P.S.O.

The candidate preferably should have a working knowledge of Khasi language but not compulsory.

Sl. No. 5

Second Post—M.A. in Economics/ M. Com with knowledge of Economics.

Sl. No. 6

Plant Breeding and Genetics—A Doctorate in Plant Breeding, Agricultural Botany or Genetics and Plant Breeding or published work of a high standard in the subject.

Candidates appointed should be prepared to serve anywhere within the jurisdiction of the North-Eastern Hill University.

Applications on plain paper indicating name, present address, age, qualification in detail, etc. etc., should reach the undersigned on or before **20th September, 1980**, together with an Indian Postal Order for Rs. 5/- (Rupees Five) Rs. 2.50 (Rupee two and paise fifty) in case of Scheduled Tribes/ Scheduled Caste payable to the "North-Eastern Hill University" Shillong as application fee.

NOTE

1. Persons in service should submit their applications through their employers.
2. Candidates called for interview will have to appear before the Selection Committee at the Office of the North-Eastern Hill University or at any place specified. A return first class railway fare for the post of S. No. 1 and Second Class railway fare to the rest of the posts shall be paid by the University from the place of start to the place of interview and back (The rate of travel allowances permitted by the Central Universities will apply).
3. All appointments will be subject to a period of probation.
4. These posts are open to all citizens of India who satisfy the required qualifications but some preference may be given to equally qualified ST/SC Candidates.
5. The University reserves the right to make appointment under Statute 21 of Act, if necessary.

M.R. Mawlong
REGISTRAR

MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE

M.A.C.S RESEARCH INSTITUTE

LAW COLLEGE ROAD
PUNE-411004

Applications are invited for the post of Director at the Maharashtra Association for the Cultivation of Science, Pune 4.

Qualifications

The incumbent should primarily be a bioscientist who is respected for his work and who has adequate administrative experience of running an Institute.

Pay Scale

Rs. 2000-125/2-2500 (existing) Plus allowances. The higher pay scale and salary will however be negotiable and will be subject to sanction by the Department of Science & Technology Govt. of India, New Delhi.

Age

55 years and above.

Interested scientists will please furnish their applications with biodata and list of publications etc. so as to reach the Chairman, Executive Committee, M.A.C.S. Pune-4 by **30th September, 1980.**

JADAVPUR UNIVERSITY
CALCUTTA-700032.

Employment Notification No. A2/C/9/80
Dated : August 8, 1980.

The University invites application in the prescribed form for the following posts :

1. **Professor** : Mechanical Engineering—Two posts
2. **Reader** : Machanical Engineering—Three posts

Qualifications for Professor Posts
Essential

(i) Research degree of Doctorate standard or published papers of an equally high standard.
(ii) Consistently good academic record with at least high Second Class Master's degree in Mechanical Engineering of Indian Universities or equivalent.
(iii) Ten Years' teaching/industrial/research experience of which at least five years must be in teaching at post-graduate level.
(iv) Proven ability to guide research.

Qualifications for Reader Posts
Essential

(i) At least high second class Master's degree in Mechanical Engineering of Indian Universities or equivalent with consistently good academic record.
(ii) Five years' research/industrial/teaching experience of which at least three years must be in teaching at an Engineering degree College/University.

Explanatory Note in Respect of All Kinds of Posts

Candidates should either have an average of 55% of the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% in each of the two examinations separately.

Desirable for Professor Posts

(i) Experience of organising laboratories
(ii) Corporate Membership in recognised professional bodies.

Desirable for Reader Posts

(i) Research degree or published papers of high standard.
(ii) Corporate Membership in recognised professional bodies.
(iii) Ability to guide research.

Specialisation for Professor Posts

(i) Machine Design—One post.
(ii) Open to all specialisations in Mechanical Engineering subjects—one post.

Specialisation for Reader Posts

(i) Production Engineering—One post
(ii) Heat Power Engineering—One post
(iii) Open to all specialisations in Mechanical Engineering subjects—One post.

Scales of Pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500.

Reader : Rs. 1200-50-1300-60-1900/-.

Those who have applied against the previous advertisement need not apply again. However they may supply additional information if they so desire.

Last date of receiving application is **6-9-1980.**

Application forms are obtainable from the University Office during working hours on payment of Rs. 2/- or by post on payment of Rs. 2/-+Re. 1/- as postal charges. No travelling allowance is admissible to candidates called for interview. Higher initial salary may be given to really deserving candidates. Those who are in employment should submit their application through proper channel. Choice of the Appointment Board will not necessarily be confined to applicants only. Canvassing in any form will disqualify a candidate.

REGISTRAR (Offg.)

ANDHRA PRADESH AGRICULTURAL UNIVERSITY
ADMINISTRATIVE OFFICE "RAJENDRANAGAR" HYDERABAD-500030

Advertisement No. 6/80, Dated : 4-8-1980

Applications are invited for the posts of :

1. ASSISTANT PROFESSORS	**Scale of pay**
2. ASSISTANT RESEARCH OFFICERS	Rs. 700-40-1100-50-1600.
3. SUBJECT MATTER SPECIALISTS	

Application forms duly filled in should be sent with Registration fee of Rs. 5/- so as to reach the Registrar, A.P. Agricutural University, Rajendranagar, Hyderabad-500030 on or before **15-9-1980.**

Subject	No. of posts	Qualifications
FACULTY OF AGRICULTURE		
1. Agronomy	7	**Essential** (i) A post-graduate degree in the subject concerned. (ii) Three years experience in teaching and/or Research and/or Extension in the subject concerned. **Note** Ph.D. degree holders in the subject are exempted from the three years experience in Research, Teaching and Extension. **Desirable :** (i) Ph.D. degree in the subject concerned. (ii) Other things being equal preference shall be given to a person with basic professional degree in the faculty concerned.
2. Agril. Chemistry	4	
3. Entomology	4	
4. Plant Breeding	14	
5. Plant Pathology	4	
6. Horticulture	4	
7. Plant Physiology	1	
8. Statistics	2	
9. Agril. Economics	1	
FACULTY OF VETERINARY SCIENCE :		
1. Asst. Research Officer (Nutritionist)	1	
2. Asst. Research Officer (Physiology)	1	
3. Asst. Research Officer (Bio-Chemistry)	1	
4. Medicine (Clinical Registrar)	1	
5. Dairy Science (Superintendent)	1	
6. Gynaecology (Asstt. Research Officer)	1	
POSTS IN AGRIL ENGINEERING IN THE FACULTY OF AGRIL.		
1. Subject Matter Specialists	2	A good Master's degree in appropriate field with two years research/teaching. experience in any institution of a University standard/establishment of repute. Preference shall be given to persons with Ph.D. degree or should have published work of an equal standard. **Note** : Ph.D. degree holders are exempted from two years' experience in teaching /research/extension.
2. Asst. Professor	1	

1. The University reserves the right not to fill up the advertised posts.
2. Applicants should appear for interview at their own cost.
3. Selected candidates are liable for transfer to any equivalent posts in teaching, research and extension in the University.
4. Selected candidates will be governed by Andhra Pradesh Agricultural University conditions of service of teachers and other employees.
5. Application forms can be had from the Registrar, Andhra Pradesh Agricultural University, Administrative Office, Rajendranagar, Hyderabad-500030 on payment of Rs. 2/- in cash or through postal order uncrossed.

T. Narayan Reddy
REGISTRAR

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University
News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH SEPTEMBER 15, 1980

Dr. H. K. Jain, Director, IARI, New Delhi, explaining the Institute's work on improvement of wheat in recent years, to the Prime Minister of Vanuvato, Fr. Walter Lini.

ASSOCIATION OF INDIAN UNIVERSITIES PUBLICATION

MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE, M.A.C.S. RESEARCH INSTITUTE

Law College Road, Pune 411 004 (India)

Applications are invited for the following posts :

Name of the Post	No. of Posts	Qualifications
Scientist C (Rs. 1100-1600) One each in— Biometry, Geology	2	Ph.D. or equivalent qualification in the subject with research publications and minimum of five years experience in writing scientific programmes, guiding post-graduate research and teaching and in laboratory organisation. Qualifications relaxable in exceptional cases.
Scientist B (Rs. 700-1300) One each in— Biometry, Microbiology, Zoology	3	Ph.D. in the subject with three years research experience and publications. Qualifications relaxable in exceptional cases.

1. Ordinarily candidates selected for the above posts will have to start on equivalent fixed remuneration depending on their actual performance. Selected candidates may be considered for equivalent scale posts on the basis of individual merit in due course.
2. Other things being equal, preference will be given to SC/ST candidates.
3. All the posts are temporary and likely to continue indefinitely and carry dearness and other allowances as admissible from time to time.

Applications stating name, age, qualificaions, research publication, experience, etc. should reach the Director, Maharashtra Association for the Cultivation of Science, Law College Road, Pune 411 004, by **10th October, 1980**.

INDIAN INSTITUE OF TECHNOLOGY

P.O. I.I.T., Powai, Bombay-400 076

Advertisement No. A-7/80

Applications are invited for the following permanent posts at this Institute, in the prescribed form obtainable free of charge from the Registrar, Indian Institute of Technology, P.O. I.I.T., Bombay-400 076 on request accompanied by self-addressed envelope (25 cm x 10 cm). For the posts of Assistant Professor and Lecturer, applicant should give an account of their academic and professional record. Persons employed in Government/Semi-Government Organisation or Educational Institutions must apply through proper channel. Indian candidates, abroad may apply on plain paper in duplicate. The posts carry allowances such as D.A., C.C.A., H.R.A. as per rules of the Institute which at present correspond to those admissible to the Central Government Employees stationed at Bombay. Completed applications should reach the Registrar, I.I.T., Powai, Bombay-400 076 on or before **10th October, 1980**.

Some posts of Lecturer are reserved for the candidates belonging to SC/ST community.

1. **Assistant Professor** : Scale of pay Rs. 1200-50-1300-60-1900.
2. **Lecturer** : Scale of pay Rs. 700-40-1100-50-1600.
3. **Development Engineer** : Scale of pay Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications & Experience

1. **Assistant Professor—Department of Mechanical Engineering**

   Degree in Engineering, M.B.A. from I.I.M. or from recognised similar Institution abroad. Ph.D. in Management or Fellow of the Institutes of Management. Should have 2-3 years of teaching, research or Industrial experience.

2. **Lecturer—Department of Mechanical Engineering.**

   Degree in Engineering. M.B.A. from I.I.M. or from recognised similar Institution abroad. Experience in Industry or teaching or research Institutions desirable.

Applicants for the above posts should have specialisation in one or more of the following :

1. Materials Management
2. Maintenance Management
3. Operations Management
4. Project, R and D Management
5. Management accounting

3. **Lecturer—Department of Humanities & Social Science**

   (i) **English**

   Applicant should have consistently excellent academic record with Master's degree in English or in Education with English as the principal subject from a recognised University / Institute. Minimum two years' experience in teaching / research/Industry. Doctorate degree desirable.

   (ii) **Economics**

   Applicant should have consistently excellent academic record with Master's degree in Economics from a recognised University/Institute with specialisation in Public Economics, Public Policy and Economic Development and Planning. Minimum two years' experience in teaching/research/industry.

   Doctorate degree desirable.

4. **Development Engineer — Industrial Design Centre**

   Degree in Mechanical / Electrical Engineering with 5 years experience in product development, thorough knowledge of various materials and processes and costing. Experience in developing mechanism and prototype from the Design stage to the production model essential. Should be capable of giving materials and processes specifications.

   Job description

   He will be responsible for developing working prototypes of various products designed at the Centre and to bring them upto a stage where they could be handed over for production.

   Experience relaxable in case of candidates of proven ability.

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE

Pilani 333 031 (Rajasthan) India

Advertisement No. FR/1/80

BITS has several faculty openings at various levels in the following disciplines :

Chemical, Civil, Electrical & Electronics, Mechanical Engineering; Computer Science; Instrumentation; Biological Sciences; Chemistry; Economics; Mathematics; Physics; Pharmacy; Museum Studies; Science and Technology Development; Management; English; Humanistic Studies.

BITS is a privately supported all India technological institution of higher learning. It is a 'Deemed University' offering degrees in the above disciplines at undergraduate, postgraduate and doctoral levels. It has pioneered several educational innovations.

The Institute is poised to offer appointments under both academic and research designations, short term appointments through its visiting and adjunct faculty arrangement, and also to fresh graduates and young persons with opportunity to work for a higher degree, which is linked with the growth of the institute in terms of its priorities.

The Institute offers latest U.G.C. salary scales. Those who are interested may ask for a booklet entitled "Introducing BITS to Prospective Faculty—1980" for all details which also contains the formal of the application form.

It may be noted that this advertisement carries no specific last date. In order to be useful for both parties the advertisement will be valid for one year from the date of its issue and the Institute will review cases received during the year more than once.

A. N. Bhargava
REGISTRAR

UNIVERSITY
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Opinions expressed in the articles and reviews are individuals and do not necessarily reflect the policies of the Association

PM Meets AIU Delegates

The Standing Committee of the Association of Indian Universities which met at Delhi on the 29th of August 1980 made a number of important decisions. Dr Ramaranjan Mukherji, Vice-Chancellor, University of Burdwan, presided. Amongst others, it made the following decisions :

1. The President informed the Standing Committee that a delegation of the Association had called on the Prime Minister on the 27th August and discussed with her the memorandum submitted in advance. She had agreed with most of the submissions made therein. In particular, she accepted the suggestion that a joint committee of the Association of Indian Universities and the University Grants Commission might prepare a piece of draft legislation for consideration of the government in pursuance of education having been made a Concurrent subject four years ago. This committee is likely to submit its draft report to the Prime Minister within two months.

2. In regard to foreign students, two complementary proposals were made. One was to request the IIT authorities to make their question papers available for those foreign students who might wish to take the test in their own country. The answer books would be sent to the universities to which they wish to seek admission and those of them that qualify would get admission. The second proposal was in regard to subjects other than engineering. It was suggested to the universities that they should organise tests in English as well as one or two other core subjects through the good offices of the Indian Embassies in those countries. The present practice whereby students come to India in search of admission is wasteful in terms of time and resources. It is important therefore to rationalise the procedure in such a way as to facilitate the admission of foreign students to Indian Universities.

3. The Standing Committee strongly recommended to universities and colleges that they should take active steps to equip new entrants into the profession with teaching skills. It was suggested in this connection that whenever any faculty improvement seminars are held, imparting of teaching skills should form an important component of the programme. A manual might be got written on the subject and arrangements ought to be made to start a correspondence course also, should there be enough demand for it. Above all, the media should be used for projecting the importance of teaching skills. From 1982 an Indian satellite would become operational. Advantage could be taken of that satellite also to create greater awareness in respect of the importance of teaching skills being acquired at the college and university level as well.

4. The Committee viewed with great concern the action of the Government of Orissa in having superseded Berhampur University a couple of months ago, thereby obliging the Vice-Choncellor to step down from his office. In the opinion of the Committee, there was no justification at all for taking such a step. Orissa is one of the States which is trying to develop. Such a step is not likely to help in this process. Orissa needs stronger universities than what she has. It is of considerable significance therefore that the State Government does its best to strengthen the universities in every possible way. Certain proposals in this behalf had already been made to the Government of Orissa and it was hoped that those would be found acceptable. ☐

Spreading Population Awareness Amongst the Youth

V.S. Mathur*

Two basic assumptions about India have to be understood at once. Firstly that India is facing a population explosion—the present level stands at about 65 crores, whereas in 1941 it was only 38 crores. A baby is born every 1.4 seconds. Secondly that the increase of economic growth has not been able to keep pace and has miserably lagged behind. As a result about 30 crores of population are living below the subsistence level.

The ever increasing population continues posing a still more serious threat to our economy and social fabric. It is tragic to learn that our per capita income is amongst the lowest in the world—150 dollars as compared to 7,000 dollars in USA, 6,000 dollars in UK and 5,000 dollars in Japan.

The remedy lies only in the twin strategies of drastically cutting down the population growth rate and substantially increasing the rate of production. Education can be the most effective single factor that can help us in both the fields. On the one hand education can work as the most effective contraceptive and on the other an educated worker is able to produce much more than an uneducated worker. It has to be a continuing effort so that the threat of increasing reproduction and lower production could be combated for all times to come. Every segment of population and every age-group has to be involved in the twin processes, citizens of today, citizens of tomorrow, and citizens of the day-after. However, it has to be understood that agricultural and industrial production cannot be stretched beyond a certain limit. Once the optimum is reached it has to stay there. Even for this, constant efforts are needed. If there is some laxity on the population front, even high levels of production will not be able to provide economic adequacy to the people.

It is, therefore, urgent that as an immediate measure re-productive couples are expeditiously exposed to the correct orientation and if necessary to the proper clinical devices. Tha ADULT EDUCATION PROGRAMME started 2 years back for the benefit of the illiterate population in higher age-groups has to be properly orientated to make it more relevant from both the angles, that is less population and more production. Legislative and punitive measures cannot bring about permanent results. Citizens in the higher age-groups have to be made conscious through intellectual motivation, of the urgent need of less population and more production, and work for it.

The lower age-groups of population can be divided into (a) school-going children (b) college and university going children and (c) out-of-school youth. All the three categories have to be exposed to the various dimensions of population growth so that when the time comes for them to act, they are in a position to take correct decisions and contribute their best to the economic growth of the country.

However, those young men and women belonging to the age-group 16 to 21 studying in colleges and universities have to be treated as a special category because in the very near future they will be asked to provide leadership in all walks of life and most certainly population control and maximisation of production will be important areas of work for them. No doubt this is a comparatively small group at present but with more facilities for non-formal education, the number of people coming in for higher education is bound to increase; But it is a very potent group.

Young men and women falling in this category (16 to 21) are sufficiently mature, knowledgeable and mentally alert. They can be told facts of life openly. Greater opportunities for discussion and debate are necessary to strengthen conviction. Opportunities, therefore, have to be provided in our universities and colleges to think deeply on the basic data and reach their own conclusions.

It may be possible to integrate the necessary orientation in some subjects like Economics, Sociology, Geography and even languages. It may also be possible to have population education as an optional subject just like classical languages etc. for the undergraduate courses. However, it is more important to include such programmes in the ordinary cultural & social and educational activities being carried out in our educational institutions. It is, therefore, desirable that some sort of forum is started in institutions where regular lectures, film shows discussions, debates, self-study etc. on relevant subjects are arranged from time to time. In some universities and colleges in the country although their number is very small, population education Cells/Clubs have been started in some cases with financial help from the Family Planning Association of India, and other such social organisations. The problem is colossal and universities and colleges will have to depend mainly on their own resources.

It should be possible to divert some part of the amalgamated funds to this programme. As an alternative it may be possible to levy a small club fee and use the material available. As far as the establishment of special cells/clubs is concerned we need not be very ambitious. A very modest beginning can be made through the initiative of one or two interested

(*Continued on page 516*)

**Consultant, Correspondence Education, Panjab University.*

Sociology of Violence
—Roots in Political Culture

S. C. Dube*

The Indian political system is under strain. In responding to the emerging social reality it has had to make many adjustments and concessions, which created a deep and wide chasm between its ideological postures and operating realities. The increasing growth of violence in the country is a by-product of its convoluted political culture.

The inadequacy of the system to deal adequately with economic and social problems generates a climate in which violence prospers. Its failure to hold in check recurrent violent conflicts promotes facile rationalisations of the situation rather than its firm handling. And there is unmistakable evidence that violence is being used increasingly as an instrument of political mobilisation.

The situation today is grim but its implications for the future are horrendous. The rate at which faith in the institutions of society is being eroded calls for deep thought and effective remedial action. The goals of society are blurred and the legitimacy of the accepted instrumentalities for their realisation is under a severe test.

The idea that the traditional Indian society was characterised by harmony and absence of violent conflict is a self-hallucinatory myth. Aggression, exploitation and violence—overt and covert—have figured in Indian life for a long time; at any rate in the past that is relevant to the contemporary generation. Absence of public outrage and dramatic highlighting by the mass media did not signify their non-existence. The situation has changed, however, in one significant way.

Earlier, the victims of violence were too weak even to protest. Now they are more assertive and do not take gross injustices lying down. Of course, the crisis is not media made. They media have a watchdog function. They must report happenings of this kind. Even the elite can no longer dismiss such incidents as trivial. By focussing attention on them the media generate anguish and concern.

There are reasons to believe that the volume of violence is increasing. The roots of this growing violence lie in the emerging political culture. The fact that unprincipled pragmatism has led to the erosion of political values is undeniable. The line that marks off the right from the wrong, in the arena of political action, is barely visible; often its demands can be ignored with impunity.

Muscle power is an important factor in contemporary political life. Though it is explicitly condemned by all political parties, it is nonetheless used, in varying degrees, by all of them to gain some short-run political objectives. Alongside of corruption, the use of violence as an instrument of political action is being perfected into an art.

Personalisation of politics leads to emergence of populist techniques for the stabilisation and routinisation of political and personal charisma of leaders at different levels. The intellectual approach to problems and their solutions is held suspect. This helps in investing added legitimacy to the new additions to political cadres who enter the higher chambers of decision-making via political intrigue and manipulation rather than through sustained study and service.

Many of them have little aptitude or training for solving problems. All too conscious of their newly gained power and position, they even lack the humility to ask for and gain by expert opinion and advice. In consequence, much of the political activity lacks, perspective and vision. Focussed on the fire-fighting operations of the day, it has little time or capability to contemplate and initiate anticipatory steps for the future. The factors that are likely to contribute towards intensification and recurrence of violent conflict in the foreseeable future go unattended.

Let us briefly examine the social, cultural and psychological factors that underlie deviance and violence in our public life. It is sad but true that the contemporary ethos is characterised by an ambivalence towards social norms. In some sectors of life conflicting norms appear to co-exist. In the absence of firm indicators for action one is tempted to pick up the most convenient option in a given context and rationalise it easily.

The resultant normative conflict often manifests itself in violence—instant or delayed. Cosmetic endeavours to ease the tensions do not eradicate the malady at its roots. Its potential for conflict, thus, remains unimpaired. Weak enforcement of norms results in the gradual erosion of the credibility of the law enforcement agencies. Today, the police as well as the magistracy and the judiciary are held suspect and not without some valid reasons. Glamourisation of violence leads to distortions in the process of socialisation.

Traditional norms are still articulated and projected as ideals, but the sanctions behind them are feeble. On the contrary, the short cuts promise quick and rich returns and many of them have tacit, if not explicit, social approval. What may be regarded as deviance in the wider society, in the conventional sense, is to some groups the legitimate mode of action. Also, victims of aggression and violence unwittingly co-operate by concealing the wrongs done to them, for a variety of social and cultural reasons. A combination of these factors is operative today to aid and abet violent conflict.

Three factors in the immediate context are important. The first is the iniquitous and therefore frustrating, want-get ratio. The poor performance of the polity has not enabled people to realize even a fraction of the hopes and dreams generated by the revolution of rising expectations. At the same time an impression has gained ground that the payoff of the politics of protest and violent conflict is greater than that of the politics of constitutional channels.

(*Contd. on page 516*)

14 OCT 1980

** Former Vice-Chancellor of Jammu University.*

CONVOCATION

Role of universities in developing societies

It gives me great pleasure to take this opportunity to pay my tribute of appreciation to the Government and the people of India for their contributions to Unesco's efforts in promoting international cooperation in the field of education, science, culture and communication. Such contribution, born of a common understanding, is specially valuable at the present time when the community of nations must forge new relationship among themselves in order to face the exceptionally complex problems which are clearly manifesting themselves in so many spheres. The most serious of these problems are those which relate to poverty and deprivation and to economic and social inequalities. Unesco's action in this regard is then to satisfy people of the imperatives and application of the new International Economic Order, and to initiate precise measures in the fields which lie in Unesco's competence. Such measures are focussing primarily on the peoples of the developing world who are most seriously affected by their problems. In the field of education, an important aim is to create in the people an awareness of the possibilities of their particular situation and to activate in them the will to change. Science and technology are indispensable as the means through which poverty and deprivation can be abolished. Indeed economic inequalities are to be found correlated to inequal distribution among nations of scientific and technological knowledge. Further development of scientific and technological capabilities in the developing countries, the exposure and improvement of the teaching of science at all levels of education are most urgent. Universities in the developing countries have in this regard a special role and responsibility, namely to take part in developing scientific and technological education under this on a wide base. Concerning research, it is important to stress that the academic distinction sometime made between fundamental and applied research are of little particular significance. Here what is needed, first and foremost, is problem-oriented research, whether fundamental or applied.

Another important problem is the domain of information and communication. Inequalities which characterise the present information and communication system generate inequalities in other domains in a chain reaction. A large majority of the member-States of Unesco desire the establishment of a new World Information and Communication Order, so as to ensure that all people will have not only adequate access to information, but more importantly, an adequate capacity to inform the world about their perception of their own situation and of world problems at large.

As regards culture, I had a chance in the last few days to come across the great works of devotion and art in your country and the universality of the aesthetic creativity so vividly displayed in the great temples. Not only do we admire the serene artistic grandeur of the magnificent temples of Tiruchirapalli, Madurai and Mahabalipuram, which stand out as eternal tribute to the pageant of a great civilisation, but we also bow our head in admiration to the spiritual vision which made this art possible. These temples, speaking through their complex and exquisite culture, are one manifestation of the many-splendoured culture and civilization of India. The other aspects manifested by equally profound attainments in poetry, music, dance, drama, literature and philosophy evoke the tribute of respect. Tamil literature is justly claimed to be the best storehouse of some of the finest thoughts of man. It might be mentioned that Unesco, in its collection of representative works, have brought out several volumes such as "The Wisdom of the Tamil People" and a translation of 'Kural' and the song of the ring 'Silappadikaram'. There is yet another reason for my joy in visiting Tamil Nadu. I am struck by a number of remarkable common features between the people of my own native land, Senegal and the people of Tamil Nadu, cultural and linguistic, especially in my own mother tongue 'Valom'. I am happy to learn that comparative studies, cultural and linguistic, are being made by scholars. I have dwelt on the theme of cultural expression, because I feel that the appreciation of one's culture, which provide the basis of cultural authenticity to one's own socio-economic function, is the foundation for a form of cultural identity. The assertion of cultural identity is an assertion of indigenous development which have human values and social progress, and is a factor for forging a wider unity.

The University of Madras has been making an important contribution to the promotion of a cultural identity of the Tamil people in the fabric of a wider Indian culture. What is significant is that it has most appropriately combined with teaching, research, experimentation and extension function in a wide range of disciplines. To specialise its application to human development has resulted in Advanced Centres of Studies dedicated to the pursuit of excellence in research and teaching in Philosophy, Mathematics and Botany.

Excerpts from the speech of Mr Amadou Mahtar M'Bow, Director General of Unesco, delivered at the time of Special Convocation held at Madras University.—

CAMPUS NEWS

Delhi sets up committees to redress karamcharis appeals

Delhi University Karamcharis are likely to get protection as statutory committees are being formed at the university and college levels to receive appeals against any injustice done to them. At the last meeting of the Executive Council the composition of the committee of appeals both at the university and at the college level has been finalised. In each case the committee of appeals will consist of five members, three of them from a panel of names prepared by the Executive Council. None of these three will be persons connected with the university or any college and at least one of them will be a person with some judicial experience.

In the case of the university employed karamcharis the Chairman of the committee of appeals would be the nominee of the Vice-Chancellor while in the case of college karamcharis, the chairman will be a nominee of the Chairman of the College Governing Body. The fifth member will be a member of the Executive Council in the case of university employed karamcharis and one of the two representatives on the governing body of the college in the case of college appointed karamcharis. The Committee of Appeals will be the final authority for any decisions regarding termination of service or suspension of service. The committee will have the powers to re-examine the entire case and the necessary documents. The machinery for redressing any genuine complaints by karamcharis regarding arbitrary termination or suspension from service has been set up after a series of prolonged strikes by the karamcharis of the university. Uptil now the karamcharis were more or less on the mercy of the principals of colleges.

Osmania holds research methodology seminar

A one-day seminar on research problems and methodology in Hindi and Telugu was organised by the Linguistics Department of Osmania University. Scholars from all parts of the country participated. The seminar suggested that language research scholars should be given more rigorous training in the mathodology of doing research. General consensus was that the research students must be trained to be able to reformulate the problems and evolve original solutions without depending on their supervisors. The supervisor's job is to see that the research worker has argued precisely without any contradiction, the theory he wants to establish and not to impose his own point of view. Prof. B. Krishna Murthy, who summed up the proceedings of the seminar, stressed that every work of research should be able to show the extent to which it had advanced existing knowledge in the field. If it failed to do so, the goal of research had not been achieved.

The participants also felt that provision should be made to enable the research worker to have interdisciplinary training which his topic of research demands. Research workers interested in comparative studies of Telugu and Hindi literature should have knowledge of both the languages and should have an integrated approach to the topic.

Panjab organises guidance and counselling cell

Panjab University has a bureau headed by the Dean of University Instruction which gives information and guidance to those going to other universities in India or abroad for higher education. It processes applications for postgraduate courses in British universities and also supplies application forms for the purpose.

Information and application forms for the graduate management admission test (G.M.A.T.), the graduate record examination (G.R.E.) and the test in English as a foreign language are provided.

The Employment Information and Guidance Bureau helps students in finding jobs. It informs students about employment avenues taking into account their interest and aptitude. The bureau imparts information regarding job opportunities in the defence services; competitive examinations held by the U.P.S.C.; self-employment avenues; the availability of various courses for students in foreign countries; occupations which are exclusively meant for women; careers and courses for higher education in India, occupations suitable for the physically handicapped and training facilities in Chandigarh.

There are facilities available in the bureau for giving individual guidance and information to students or visitors. One of the most important functions of the bureau is to assist the university students in getting part-time jobs locally with a view to helping the deserving ones financially.

Persons holding professional degrees or equivalent diplomas in engineering, medicine, veterinary sciences, technology, law, Science, Home Science, agriculture, except B.A./B.Sc., with B.Ed. and a master's degree or postgraduate diploma in other subjects or equivalent thereto are registered for employment assistance.

5-year law course at Madras

The Madras University Syndicate has accepted the offer of Rs. one crore from the Periyar Trust for establishing a hospital complex at Taramani and appointed a committee to prepare a project report.

The complex is meant to be a

referral hospital as an adjunct to the Postgraduate Institute of Basic Medical Sciences attached to the university. The proposed hospital will train undergraduates and postgraduates in medicine and help research. The institute is expected to develop as a university medical college.

The members of the committee are : Dr. S. Gnanadesikan, Director of Medical Education, Dr. A. Venugopal, Dr. M. Natarajan, Mr. S. Vaiyapuri, Prof. P. S. Manisundaran and Mr. K. Veeramani.

The Syndicate has also accepted a proposal for offering a degree course in law of five years' duration after the plus 2 stage. This course is likely to be started from 1981-82. As a transitional measure, the three-year law course will be continued to be offered for three years.

According to another decision of the Syndicate, the pre-university candidates admitted to the medical degree course will be brought on par with plus 2 (higher secondary) candidates as regards the duration of the medical course, that is, four-and-half years. The preuniversity students must, however, study certain additional portions in physics, chemistry and biology along with medical subjects and secure a pass in these before they appear for part II of the first M.B.B.S. examination.

Karnataka to review college admission policy

The Karnataka Government is "reviewing" its policy of letting some private medical colleges admit students against donations rather than on merit. Union Government officials said today. The practice of charging huge sums as "capitation fees" for enrolling students has been in evidence at some private medical colleges in the State for many years. The rates have been rising all the times, particularly since engineering graduates began finding themselves with a job. Today, these colleges keep aside one-third of their seats for wards of affluent families willing to pay up to Rs. 1.50 lakh for a seat. The practice puts at a disadvantage academically brighter admission seekers against those whose major qualification may be their parents' wealth. The Union Government has for long opposed the charging of capitation fees and time and again advised the State Government to scrap the system, officials said.

Karnataka to have two more universities

The Governor of Karnataka has given assent for starting two more universities at Mangalore and Gulbarga. A date has however to be fixed for the inauguration. The Education Minister, Mr. G. B. Shankar Rao, said in Bangalore that special officers have been appointed to take care of the preliminaries and the Vice-Chancellors, the Syndicate and the Senate members would be nominated shortly. The Minister said that the comprehensive education Bill was also ready and would be placed before the next session of the Legislature.

Patna to introduce Bhojpuri

Patna University is likely to introduce Bhojpuri teaching at the intermediate stage from this academic year. This was decided at a meeting presided over by Dr. Lal Saheb Singh, Pro-Vice-Chancellor of Patna University. Acharya Devendra Nath Sharma, Prof. Ram Bachan Roy, Dr. Gopal Roy, Dr. Shailendra Nath Srivastava also attended the meeting. A committee has recommended the adoption of a regular course but the recommendations are yet to be approved by the Academic Council.

Experts visit quake-hit Pithoragarh

A six-member team of experts from the Earthquake Engineering Department of Roorkee University led by Dr S. P. Gupta, made an extensive survey of earthquake-hit areas of Pithoragarh district and conducted detailed technical investigations perfaining to earthquake.

Dr. Gupta said that the entire belt extending from the Himalayas to Assam being in seismic zone adequate precautions were needed in construction of houses. He was of the view that two codes published by the Indian Standards Institute (IS 1893 and IS 4326) should be followed in such areas. Use of lintel and room-bends was vital in such constructions. Where the soil was unstable iron bars should be erected in wall foundation. IS 4322 contained detailed instructions in this regard.

Dr Gupta said that scientists were working on evolving a system of forecasting earthquakes. The recent earth tremors on July 29 last had caused extensive damage in Pithoragarh district killing six persons and injuring 13 others. As many as 1,600 houses were damaged 600 of them completely Dharchula sub-division was worst hit where 1,100 houses were damaged. Of them 500 were destroyed completely.

Massive population education plan

The Government has launched a massive population education programme in the country in an effort to create an awareness in the younger generation of the importance of controlling the growth rate of population. Population education is accordingly being introduced as a subject in the formal education system. In furtherance of this programme, the Union Education Ministry has set up a national steering committee with overall authority for co-ordination and implementation of the programme at the national and state levels.

The committee, which is headed by the Union Education Secretary, has as its members representatives of the Planning Commission, Ministries of Health and Family Welfare and Information and Broadcasting, the University Grants Commission the National Council of Educational Research and Training (NCERT) the Central Board of Secondary Education and the Family Planning Association of India. The term of the members of the committee will expire on March 31, 1983 unless extended. The committee will advise the Union Government on all matters relating to the population education programme. It will review and evaluate from time to time the progress of the programme. Ten states have already taken up the programme this year and nine others will do so next year. The ten States and Union territories presently participating in the programme are Bihar, Chandigarh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and Tamil Nadu.

Adult education programme to be redrafted

The Government will soon revise the national adult education programme redrafting it with a new orientation.

The decision is a sequel to modifications suggested by a review committee as also shortcomings noticed in the working of the programme. There was criticism that the programme had turned out to be a mere literacy campaign, no more linked to the developmental effort. Certain communal organisations were entrusted with the responsibility for the programme while many other organisations of workers, peasants, youth and teachers remained excluded from it.

The programme was also regarded excessively bureaucratic.

Apart from the criticism, the Government also had before it the report of the review committee under the chairmanship of Dr. D. S. Kothari, former Chairman of the University Grants Commission.

The Kothari Committee recommended that the adult education programme should become an integral part of the minimum needs programme and that illiterate population between 15 and 35 years of age should be covered under the programme in the shortest possible time.

A group of officials examined the review committee's report and endorsed the recommendations to link the programme to the minimum needs scheme and to cover the 15-35 age group with speed.

Taking an overall view, the Government is understood to have decided to screen the list of organisations so as to eliminate communal organisations from the purview of the programme.

Panjab weightage for armed personnel

The Syndicate of Panjab University has decided to give a weightage of 3 per cent to the members of the defence forces including ex-servicemen at the time of admission to the university. It has also decided not to admit more than 20 students to the LL.M. (Pt. I) course during this academic year. The Syndicate also decided that the revaluation may be done under the old rules. The university would be setting up a library-cum-guided study centre at Amritsar for the benefit of students of correspondence courses.

Bihar to make physical education compulsory

The Bihar Government is taking necessary steps for the promotion of physical education in the State. It was being contemplated to introduce physical education as compulsory subject in schools and colleges. This step would give a boost to the physical education in the State. The Bihar State Physical Education Teachers' Association has been demanding reservation of jobs for unemployed physical training instructors and promotion of physical education in colleges and universities.

Indian school of Mines

DHANBAD-826004

No. 615126/80 **Dated Aug 25, 1980**

Admission to Make-up Semester of Adv. dip in Mine Surveying—1980

Applications are invited from IN-SERVICE candidates possessing requisite qualifications for admission to MAKE-UP SEMESTER of Advanced Diploma Programme in Mine Surveying being offered by the School, which is deemed to be a University under UGC Act. This make-up semester (16 weeks) is in addition to the regular one-year course and shall commence from 1st Dec. 1980.

2. **Eligibility conditions**: Matriculation/SSLC with Mine Surveyors Certificate of Competency granted under the Mines Act **Plus** one year experience as surveyor in **underground** mines after obtaining the said certificate.

Maximum **Age Limit** is 45 years.

3. Preference will be given to sponsored candidates. Sponsorship in this context means retention of lien on post and grant of suitable allowances. Application of sponsored candidates should carry suitable endorsement to this effect by the employer.

4. Application forms, along with the relevant information bulletin, can be obtained by sending a Bank Draft/Crossed Postal Order for Rs. 5/- made payable to the Registrar, Indian School of Mines, Dhanbad-826004.

LAST DATE FOR RECEIPT OF APPLICATIONS: OCTOBER 18, 1980

S.P. VARMA
REGISTRAR

News from Agril. Varsities

Prophetic role of agricultural universities

There have been many studies of the development challenges that we face in the years ahead. But the most recent—and perhaps the most striking, owing to the prestige of its authors—is the report entitled "North-South : A Programme for Survival". This was released by the Commission led by former Chancellor Willy Brandt.

The report obviously goes beyond food and agriculture. It covers energy, population, international monetary structure and aid. But hunger and rural penury are at the core of the document because this is where human anguish is at its most excruciating. "Poverty goes hand in hand with hunger", the Commission says in its chapter on Hunger and Food. "Compassion, solidarity and self-interest call for the urgent abolition of hunger. Yet progress has been stumbling and slow".

The report describes a belt of poverty where the disparities between rich and poor are not only wide but continuing to move even further apart—threatening to be unbridgeable. Countries of the North, have only one fourth of the world's population. Yet, they possess four fifths of its income. In the nations of the South, about 800 million people are destitute. Half of these are in Asia—many of them in India. FAO figures show that food production, in all developing countries, rose by over 2½ percent annually between 1950 and 1975. But demand for food has, in the same period, increased by well over 3 per cent a year, as population and incomes accelerated. Despite the onset of fertility declines, Asia will continue to be burdened by the momentum of rapid population expansion. This pace was largely set between 1950 and 1975. Most countries in this Region will, like it or not, see their populations double. Thus, the pressure of increasing populations upon the food-producing potential of our world will remain enormous.

Statistics, as you know, have a capacity to strip facts of human meaning. Yet, we cannot afford to forget that these figures represent human life, with potential for material and spiritual achievements. Yet, most of them will probably never be able to break forth into creative productivity, since mass poverty will abort this rich human potential. A full three quarters of Asians, as you know, live in rural communities. Almost 500 million are small farmers or landless labourers living in squalid poverty. Within this group, 100 million are shifting cultivators who slash-and-burn to survive. Over 270 million of these poverty-stricken people are concentrated here in South Asia. Recent development literature characterized them aptly as "marginal men". Malnutrition saps their bodies. And premature death is no stranger to their households. Lack of education seals off what shreds of hope they cling to for less drudgery. Your economic history classes in this University will have shown how the conventional wisdom in the 1960s and 1970s dictated that scarce resources be channelled to urban enclaves. Agriculture was given short shrift. It was then argued that benefits would ultimately "trickle down" to these impoverished men, women and children. They never did. Poverty spread and encircled pools of urban wealth, threatening to swamp them with uncontrolled migration. Yet, the paradox is that the burden of producing the food that our spiralling populations require, rests on the shoulders of these frail men. It is a non-transferable burden.

The question asked often today is: Can Agriculture in the Region provide the food, the raw materials, the education, the jobs and other amenities, over the next 20 years when density could well be over 275 persons crammed into every square kilometre in many countries ? Viewed in a wider setting, can the world's farms feed the people of tomorrow ? The answer is yes. Scientists agree that the main constraints that cripple agriculture are man-made. The Leontiff report, for instance, on the *World Economy in the Year 2000* stresses that the principal limits "to sustained economic growth and accelerated development are political, social and institutional in character rather than physical". Within the 20th century, there are no insurmountable physical barriers that bar the poor countries from working their way out of perpetual poverty and hunger. This conclusion is also reflected in the major study that I directed FAO to undertake, namely: *Agriculture: Toward 2000.* We have done both the global perspective and drawn the regional implications of those perspectives. *At 2000* uses sophisticated economic modelling tools, setting out normative and trend scenarios. These examine the feasibility of a policy goal all nations are agreed upon: To arrest a deterioration in self-sufficiency of basic foods and provide enough food for all tomorrow. It also works out in detail some of the implications of a sharp improvement in food production over the next 20 years. *At 2000* indicates that this Region has the potential to solve its food problem. It could raise its cereal self-sufficiency ration from today's 93% to 97% by 1990—and sustain it at level clear up to the year 2000.

Obviously, this would call for efforts we have not mustered so far. Investments would have to be doubled. Inflow of technology, from agricultural schools and other sources, must accelerate. Policies that drag back rural development would have to be recast. Above all, we must find ways and means to unlock the productivity potentials of the millions of small farmers and landless sharecroppers. Such an objective requires dismantling of oppressive socioeconomic structures. It calls for access by farmers to land, water, credit and other vital inputs. It demands protection of their rights to organize. It requires implementation of agrarian laws that are honoured more in the breach. All these have been summed up in the Declaration of Principles and Programme of Action drafted by the World Conference on Agrarian Reform and Rural Development. And the goals are worth the effort. By 1990, average calorie intake could slightly exceed nutritional requirements. By 2000, it could well be 13% higher. It would mean the impoverished will have moved to more humane standards of living. But the testing time is ahead. We have to see whether action matches needs and aspirations. The World Conference realized that there is no substitute for the effective monitoring of programmes. Monitoring calls for more precise definition of programme objectives. We need to establish better criteria. We must also develop mechanisms for effective evaluation. In the view of experienced fieldmen, this would involve participatory evolution. This means allowing village people or other programme beneficiaries to pass judgement on our work. It is here that an agricultural university can make a positive contribution. It can make its scholarship and resources available to help monitor progress—or the lack of it—towards agrarian reform or other agricultural and rural development objectives. In so doing, the University can help reinforce a sense of accountability in development agencies. It is this concept of accountability that distinguishes the paternalistic from the participatory programmes. Responsibility for ensuring that reform measures are translated into realities, tangible to the farmers, rests to a large extent upon institutions like this University. What should probably engage increasingly the attention of our agricultural universities are the subtle but very real non-technological barriers to a production breakthrough. Programmes must be effectively decentralized to tap local initiative and innovativeness. They must build on indigenous institutions and respect local cultural values. FAO experience in Asia, for instance, shows that many rural development programmes tend to drift willy-nilly towards solely technical improvements: increased yields and reduced costs, mechanization, huge irrigation systems, and fertilizer inputs, etc. But the subtle social undercurrents, that run below the surface, were likely to be overlooked. That experience also shows that all too often, efforts concentrate on delivery services to farmers. But few help the farmers develop their "receiving mechanisms" for such services. There is, too, a glaring need to identify and nurture social leadership and organizations in adapting new technology in the village—a role that agricultural universities can support. There is no disagreement on the need for such re-examination. It is always helpful to periodically restudy our basic premises.

How then can our educational systems be reshaped? Can our agricultural universities move deliberately into a policy of serving—not merely the fittest—but helping the weakest? Such a direction, it seems to me, would be in keeping with Mahatma Gandhi's tradition of seeking out the lost, the lowest and the least. The life of the Asian farmer is exceedingly complex. Also, there are sharp differences in the perception of decision makers or educators and villagers. This difference persists because many of our faculty and students rarely have the opportunity to look beyond the needs of their "model" farmers. This is aggravated when faculty members tend to teach and research on what is fashionable internationally. This attitude alienates the scholar from the realities of Asian agriculture. This alienation is an occupational hazard and arises partly from attitudes and temperament developed in advanced training. Many, therefore, scoff at the idea of peasant-based and oriented scientific research that seek out deliberately peasants' participation. There are a few universities in Asia that now welcome experienced peasants into their faculties and experimental farms. But they are the exception. Most insist this is a job for a trained elite. This view is unfortunate. It constricts the peasants to the category of research subjects. Their wisdom remains untapped. And the researcher plans for them, thinks for them—and even commits mistakes for them. I do not depreciate scientific methods. My long years in training and research institutions have taught me these qualities are essential. What I wish to emphasize here is that our academic practices should not produce small elites alien to the people they are supposed to serve. In the future, our educational efforts will have to stress problem-solving processes whereby people learn from each other—and discover their own potential. Agriculture, after all, is basically an applied science. And the hierarchal separations between professor and student will probably have to be recast, if we are to uncover the potential latent in the small farmers. Ultimately, the strength of an agricultural university—in the Third World—rests on its identification with programmes of, for and by the rural poor. With this identification comes what has been called the "prophetic role" of the agricultural university. It becomes the voice for the silent masses and a beacon for our people.

[Excerpts from the address delivered by Mr. Edouard Saouma, Director-General of the FAO of the United Nations at the Punjab Agricultural University.]

Commonwealth Prime Ministers visit IARI

The two Commonwealth Prime Ministers, Mr. T. Louti of Tuvalu and Father Walter Lini of Vanuvato who attended the Regional Commonwealth Conference held recently in New Delhi also visited the Indian Agricultural Research Institute. They were shown by Dr. H.K. Jain, Director of IARI, the high yield production technology which has helped to bring about a major transformation in Indian agriculture during the last 14 years. The visiting Prime Ministers showed considerable interest in the high yielding varieties of rice, maize, sorghum, millet and pulses, which were on demonstration on the Institute's experimental farm. They commented favourably on the new rice varieties which combine a very high yield potential with early maturity and excellent grain characteristics approaching those of India's traditional *basmati* rices. IARI is a leading centre in the world where efforts have been made to combine high grain yields with quality characteristics in rice varieties.

The Prime Minister from Tuvalu was impressed with the fact that a great deal of new agricultural technology which is being developed at the Institute is relevant to the needs of small farmers. He showed particular interest in the intensive cropping patterns which have been evolved by the Institute for very small land holdings, keeping into consideration the needs of different groups of farmers specialising in dairying, vegetable production and production of foodgrains. Father Walter Lini also showed interest in the biogas plant whose latest models were on display. IARI was the first institution in the country to develop the biogas technology and its scientists are now working on community biogas plants so that the needs of an entire village where farmers have only one or two cattle could be met from the pooling of their resources.

Krishi vigyan kendras reviewed

The third All-India workshop on Krishi Vigyan Kendras (KVK) was held in Pondicherry to review the progress made by the kendras during the last year and plan next year's programme of training of practising farmers, farm women, young farmers and others under this innovative scheme. Besides scientists and officials from the Indian Council of Agricultural Research, two participants from each of the 31 kendras participated in the workshop which was organised in the premises of the first Krishi Vigyan Kendra established in March 1974.

The KVKs have so far organised 2,769 training courses upto June 1980 and trained 63,420 farmers—both men and women—in various skills in the fields of crop production, livestock production, fisheries, agricultural engineering, home science and horticulture.

Along with the KVKs, the Trainers' Training Centres (TTC) which impart practical training to the teachers and trainers of the kendras, have so far organised 142 training courses in which 1935 trainers and extension workers took part. There are seven TTCs in the country.

The Krishi Vigyan Kendras (Farm Science Centres) were established by the ICAR to fill the gap which existed between the vocational training needs of the farmers and the existing training facilities so that effective transfer of modern technology evolved in the field of agriculture could pass on to the farmers. The KVKs impart training to practising farmers, farm women, school drop-outs and in-service development staff at centres located in the heart of rural areas so that they can use to their best advantage the scientific know-how in the field of agriculture, horticulture, fishery and allied subjects.

The KVK's do not award any degree, certificate or diploma to the participants because the idea is not to turn out yet another group of white-collared job-seekers through this training. The prime method of training in the KVK is through the work experience in which the trainees practise skills by doing what they are expected to do on their own farms. Unlike the usual lecture and notebook dominated training courses, KVK training programmes take into account all methods and means which result in skill development.

There are no fixed syllabi either. The training is based on the felt needs of the farmers which are of immediate relevance and are tailored to the needs of the practising farmers. They are determined keeping in view the particular group of trainees—their back-ground, interests, needs, resources.

The National Commission on Agriculture has recommended that at least one KVK should be established in every district (there are about 400 districts in the country) by the end of the Sixth Plan, and three each by the year 2000. The ICAR proposes to set up about 100 KVKs by the end of the plan period. More centres will have to be established by the Government.

Existing KVKs maintain linkages with agricultural colleges and universities in the area, ICAR institutes, and rural development organisations run by voluntary agencies. Preference is given to hilly, drought-prone, forest, flood, prone and coastal areas and those dominated by Scheduled Castes and Tribes in setting up the KVKs.

Ultimately the KVKs are expected to provide training facilities dealing with all aspects of rural life and support the integrated rural development movement.

AAU's research committees meet at Jorhat

The Assam Agricultural University is fully charged with Statewide responsibility for Agricultural Research in Assam. The research planning for faculty level is done in each faculty by the various subject matter discipline research committees. This year's Research Committee meetings for the Agriculture and the Home Science faculties were held at the University Headquarter at Jorhat. The meeting was inaugurated by the Vice Chancellor Dr. D.N. Borthakur. In his inaugural address Dr. Borthakur underlined the need for multi-pronged efforts by University Scientists to step up agricultural production keeping in view the rapid rate of population explosion. The Vice-Chancellor made special mention of need for research in fisheries, recycling of agricultural wastes for increasing productivity and integration of crop and livestock farming.

Earlier the University's Director of Research Dr. B. C. Barthakur made a review of research work done and achievements made. The Director of Research outlined the major thrusts, strategies, problem areas and priorities for research in agriculture. Relevance of research programmes for the needs of the State, excellence in their execution, farming systems approach for research, a long term view for increasing productivity, conservation of plant genetic resources interdisciplinary approach for solution of problems and avoidance of duplication of efforts were mentioned as watch words in the formulation of research programmes by Dr. B.C. Barthakur.

The inaugural meeting was attended by more than 200 scientists drawn from the University's Regional Research Stations and the University Headquarter. The faculty of Home Science is convening its research committee meetings for the first time under the Chairmanship of its Dean, Dr. Anwar Saikia. The faculty of Veterinary Science is going to convene its Research Committee meetings during the first week of September.

New courses at APAU

Andhra Pradesh Agricultural University has for the first time in the country introduced rural work experience programme for one semester for B.Sc. (Agriculture) final year students.

Mr. J. Raghotham, Vice-Chancellor of the University said in Hyderabad that in all 232 final year students had ben sent on July 1 to villages under 29 research stations throughout the State. The duration of the programme will be for one semester or about four months of the total eight semesters required for their degree programme.

The objectives of the rural work experience programme were to provide opportunity to students to live in rural areas and develop right perspective of rural life, to gain first hand experience in the application of agricultural technology on the farmers fields and to develop communication skills in students to do better agricultural expansion work.

This plan was jointly sponsored by APAU and the Department of Agriculture. The students would stay and work in the villages by associating themselves with all the farm operations of the farmers. During the period of their stay in the village the students would be provided with stipend of Rs. 175/- to meet part of their living expenses.

The university was also introducing seven composite inter-disciplinary courses in production technology of pulses, commercial crops, horticultural and other branches of agriculture. These practical courses were the first of their kind to be introduced for the first time in the country. APAU had also introduced common examinations for all its constituent colleges from the last academic year. It has also introduced entrance examinations for M.Sc. (Agriculture) and B.Sc. (Home Science).

JNKVV evolves highyielding Kodo and Ragi

With a view to improving upon the economy of the tribal people, Jawaharlal Nehru Krishi Vishwa Vidyalaya has evolved highyielding varieties of minor millets which are their principal crops. The new varieties are : Kodo JNK 101 and JNK 364 and Ragi (Madua) JNR 1008 and JNR 852. These have been found the best in the trials of the ICAR Coordinated Research Project. Kodo JNK 101 has already been released for general cultivation by the Madhya Pradesh State Variety Release Committee. The rest are in the pre-release stage.

Kodo JNK 101 matures in 95-100 days and yields 12-14 q/ha. Kodo JNK 364 matures in 106 days and yields averagely 16 q/ha. Ragi JNR 1008 is an early variety (110 days) and yields 22 q/ha. Ragi JNR 852 matures in about 115 days and yields 25 q/ha.

Even during the last drought conditions, the new varieties have given good performance. On the Chhindwara and the Durg experimental fields Kodo JNK 364 yielded 8 q/ha and Ragi JNR 852 yielded 16 q/ha.

The local Kodo varieties in vogue in the tribal tracts averagely yields only 3 to 4 q/ha and Ragi 8 to 10 q/ha.

Personal

1. **Prof. K.S. Shastri has taken over as the Vice-Chancellor of the South Gujarat University.**
2. **Shri Anand Sarup has taken over as the Vice-Chancellor of the G.B. Pant University of Agriculture and Technology.**
3. **Mr. M.A.M. Gilani, former Vice-Chancellor of Bhagalpur University and former Chairman of Bihar School Examination Board, has been appointed Chairman of the newly constituted Bihar State Intermediate Council.**
4. **Prof. Mohammad Shafi of Aligarh Muslim University and Chairman of the Indian National Committee led the 15-member delegation of eminent Indian geographers at the International Geographical Congress held in Tokyo.**

New from UGC

Need for national law institute

A series of regional workshops, organised by the University Grants Commission for modernisation of legal education has recommended the setting up of a National Institute of Legal Education. The main objectives of this Institute will be to provide teacher training and faculty improvement programmes. The Institute will also act as a data bank as well as an evaluation agency for the teaching of law.

Pending the establishment of the Institute, the workshops suggested the holding orientation courses in at least 10 to 12 major subject areas in order to make the law-teaching system essentially a problem-posing one.

Experts from various universities, who participated in these workshops, felt that the examination papers should also gradually pose "problem" questions. Also, question banks should be developed to check students' reliance on cheap cram books.

The workshops have urged that legal education should be primarily in the hands of duly qualified full-time law teachers. They wanted courses dealing with law, social justice, and agricultural development to be added to the LL.B. curricula. The focus should also be on the problems of under-privileged and vulnerable groups in society including the Scheduled Castes and Scheduled Tribes. The experts were against admission of part-time students to LL.M. courses.

The report has recommended that the system of internal assessment should be introduced for law examinations. Also, two compulsory foundation courses dealing with the law and problems of social change in India and social science research methods should be introduced for LL.M. students. With the addition of these courses, LL.M. should be treated on par with M. Phil.

UGC surveys higher education in states

A recent UGC survey has revealed that more than 57% of the affiliated colleges in the country have less than 500 students on their rolls. These economically non-viable colleges in nine major States—Andhra Pradesh and Punjab (109 each) Assam (106), Bihar (133), Karnataka and Madhya Pradesh (154 each), Maharashtra (231), Tamil Nadu (91) and Uttar Pradesh (182)—have been a drag on higher education.

Only three colleges, one each in the universities of Agra, Meerut and Calcutta, have more than 5,000 students each. As against this, 1678 (nearly 57%) affiliated colleges out of 2923 have less than 500 students, 297 colleges less than 200 students, 520 more than 100 but less than 200, 300 more than 200 but less than 300, 269 more than 300 but less than 400 and 232 colleges have more than 400 but less than 500 students. The UGC is helpless as opening of new colleges is exclusively a state subject. With rising unemployment among the graduates and postgraduates the number of students going for higher education is still rising in the backward States like Bihar, Orissa, Assam and Madhya Pradesh. The study reveals that in all the States, except West Bengal, the percentage of students going in for higher education in the relevant age group (17-23) was below 3%. The increase varied between 3% in Bihar and 23% in Karnataka and Punjab followed by West Bengal with an increase of 21. The number of students per thousand of population came down in five States of Assam, Bihar, Karnataka, Kerala and Madhya Pradesh. Viewing such a situation against the rise in the number of graduate and postgraduate job-seekers by an alarming rate of 27% the study drives home the point that there are imbalances in the present educational pattern. As early as 1964, the Commission had warned against the growing regional imbalances. It said that at the national level it should be regarded as the responsibility of the Government of India to secure equalization of educational development in the different States. The necessary programme for this including special assistance to the less advanced States should be developed. Yet another despairing note of the study has been the fall in the number of women students taking to higher education. During 1970-75 the highest increase in the number of women students going in for higher education was recorded in Gujarat (13.5%) followed by Maharashtra (9.9%). The lowest rate however was in Kerala (0.14%) while in Bihar it was negative (—3.4%).

Contrary to past practice, there has been a change in the pattern of higher education and subjects such as education and law have acquired priority because both provide self-employment. Students going in for science and medicine appeared to be a thing of the past. Interestingly, the faculties such as agriculture, engineering and medicine recorded a growth rate of only 2.4% between 1970-71 and 1975-76 as against 3.6% between 1965-66 and 1970-71. This clearly indicated that the desired pace of expansion was still lacking in these fields. At the same time the percentage of students going in for postgraduate courses and for research have also been on the decline.

Awards for Gandhian studies

To promote research in Gandhian thought, the University Grants Commission has awarded three Research Associateships. These awards are given to holders of Ph.D. degrees or to those who have equivalent research work or field experience to their credit.

The Associateships are normally tenable for three years, which can be extended by two years. The awards are in three categories—of Rs. 1000, Rs.1200 and Rs. 1400 each per month with a contingency grant of Rs. 2000 each per year. The candidates selected are :

(1) Dr. Mrs. Shila Sen—Jawaharlal Nehru University.
(2) Dr. Antony Chrisppanath—Karnatak University.
(3) Dr. B. Prasad Pradhan—Utkal University.

The Commission has also awarded two junior Research fellowships of Rs. 400/- each per month for Gandhian Studies. The fellowships are tenable for four years. The value can be raised to Rs. 500/- per month, after an assessment, on completion of two years.

Panels for syllabi revision

Expert penels, set up by the University Grants Commission for revision of syllabi in various subjects, have drawn up broad lines of development, including priority areas of research. In sciences, some of the disciplines have been grouped together in a single panel. A number of special committees have been set up, in addition to panels for sciences. The recommendations of these panels for revision of syllabi include perspective plans for improvement of teaching also.

The Commission has already issued guidelines to universities emphasizing that the restructuring of courses should ensure that at the undergraduate stage they are more relevant to the rural environment and to the development needs of the community. They should also provide linkage between education on the one hand and field work, practical experience and productivity on the other. A set of foundation courses has also been suggested to the universities for inclusion in the curricula dealing with the history and culture of India as well as that of selected countries in Asia and Africa. Population education, besides concepts and processes of development and Gandhian thought, will also form part of the proposed foundation courses.

Correspondence courses in every state

The University Grants Commission has accepted in principle the proposal of Calcutta University, one of the oldest universities in the country, to start correspondence courses leading to B.A. & B.Com. degrees. The Commission has approved in principle a similar request from Patna University as well. With these, almost every state in the country will have facilities for correspondence courses. Also, a majority of universities are permitting students to appear privately at their examinations.

The universities offering correspondence courses are Allahabad, Andhra, Annamalai, Bhopal, Bombay, Delhi, Himachal Pradesh Jammu, Kashmir, Kerala, Madurai, Meerut, Mysore, Osmania, Punjab, Punjabi, Rajasthan, S.N.-D.T. Women's, Sri Venkateswara, Udaipur and Utkal besides the Central Institute of English and Foreign Languages, Hyderabad.

News from ICSSR

Alternatives in development : An invitation for research

For quite some time, the Indian Council of Social Science Research (ICSSR) has been engaged in developing a major research programme under the broad perspective of 'alternatives in development'. A major concern has been to initiate some rethinking on our developmental model. A sense of failure and inadequacy haunts our diagnosis of India but it seems that modern societies of all varieties are experiencing serious constraints in translating their utopias into realities. Can there be a general theory to explain this limitation, and are there any alternative paradigms to move from crisis to hope ?

The ICSSR is keen to promote research in this area and would welcome ideas, comments and suggestions. These need not necessarily be spelled out in great detail, but if they are, this would be welcomed. Any research proposal that suggests a new line of enquiry, a new kind of critique or a possible alternative can be considered for support from the Council. These proposals may seek to study the nature and magnitude of different types of crises in contemporary societies, the potential and limits of social science theories to understand and explain such crises, and the successful or even failed alternatives offered now or in the past to meet these crises : a vision worked out or tried by some individual, a citizens' movement pushed by voluntary efforts or by established political parties, or a new policy line adopted by a corporate institution or even a government in India or outside.

Our idea is to generate a fresh debate among social scientists : Is meaningful intervention possible in modern times to change the quality of life in this country, in the Third World, or in the industrialized West ? If the answer is 'yes', what are the intermediate steps needed to bring about this change ? Can the conventional social science, imprisoned by its own history and culture, meet this challenge ? Is there any alternative ?

The ICSSR is prepared to fund research projects, award fellowships, finance seminars and workshops, and even provide assistance for documentation to explore these questions.

Your suggestions may kindly be addressed to : Dr K. P. Gupta, Hony. Director, Programme on Alternatives in Development, Indian Council of Social Science Research, IIPA Hostel, Indraprastha Estate, New Delhi-110002.

Science & Technology

Five-point plan for Science, Technology

The Department of Science and Technology has drawn up a five-point programme for 1980-81. They are intensification of research work in high priority areas, schemes for development of the Scheduled Castes and Scheduled Tribes in science and technological areas, promotion of scientific interest in youth, assistance for development of councils for science and technology, and promotion of technical co-operation among developing countries.

An increased allocation of Rs. 36.87 crores has been made in the budget proposal for science and technology. The previous government had earmarked Rs. 33.31 crores for 1979-80, but later it was revised to Rs. 28.14 crores. The increase in the budget estimates for 1980-81 is mainly on account of the provision of Rs. 4.1 crores for payment of the first instalment for the Oceanographic Research Vessel, and an increased provision made for ongoing schemes such as new energy sources.

The Oceanographic Research Vessel for the development of non-living resources is proposed to be acquired with the assistance of West Germany.

The budget also includes a provision of Rs. 2.25 crores for R and D work on new energy sources such as solar energy, wind power and biogas.

During 1980-81, apart from continuing work on ongoing schemes, it is proposed to undertake work on a pre-commercial pilot plant and demonstration for techno-economic viability of solar photovoltaic power sources and systems for remote areas, as also a prototype-cum-product developments venture for solar thermal applications.

The proposal reveals that the first phase of the new fibres and composite project taken up with the United Nations Development Project (UNDP) assistance was nearing completion.

During the current year, work will be continued on two projects—one relating to production of carbon fibres and the other for the development of designs and moulding compounds. The budget estimates include a provision of Rs. 55 lakhs for continuance of these projects.

New turn to brain drain

Indian scientists and technical personnel going abroad now outnumber doctors. A few years ago, 50,000 doctors were serving abroad. There may still be an equal number of Indian doctors abroad but if official figures of enrolment are a guides, they are outnumbered by scientists and technical personnel. As on January 1, 1980, 22,320 people were enrolled in the Indians Abroad Section of the National Register. Of these, 5,203 were engineeers and technicians, 3,744 scientists, 2,209 doctors and 11,164 social scientists and others.

Since enrolment is voluntary, the CSIR believes that the exact figure of people abroad will be much higher. But assuming that the percentage of enrolment for each group is the same. There must be many more Indian scientists in foreign countries than doctors. The USA accounts for 37% of those registered in scientific and technical fields. Britain 35%, West Germany 8.7%, Canada 6.1% and other European countries 7.6%.

About 53.8% of those in the USA have chosen not to return. The figure is 49.1% for Britain, 51.4% for West Germany, 61.4% for Canada and 41.4% for other European countries. There are 7,422 scientists, 1,305 technicians, 8,457 engineers and 4,510 medical men among those enrolled.

Among the steps taken by the Government of India to get Indian scientists and engineers to return to India is the creation of Scientists Pool. Up to now 9,889 have been selected for the Pool and of them 5,570 have returned to India. In the initial stages the flight of trained personnel was only to the countries of the West mainly the USA/Canada and Britain/Continental Europe. West Asia now accounts for a fair proportion of this flow.

Foreign News

UNICEF to sponsor area research project in thirteen states

A new three-year scheme of cooperation is being launched by UNICEF in 80 districts of 13 States as part of the Area Development Programme. The essence of this programme is to provide delivery services to children and women in a convergent manner. This concern has coincided with the Government's emphasis in recent years on reducing the regional disparity in the availability of social services and a growing recognition that economic development must seek to achieve social goals and objectives.

The three-fold objectives of the Area Development Programme are to improve the impact of child care services in limited well-defined geographical areas, raise the nutritional and health of young children and to enhance the capability of mothers to look after the physical and social needs of their children. So far, area development projects have been approved for UNICEF assistance in six districts of Andhra Pradesh, Maharashtra, Orissa, Tamil Nadu

Uttar Pradesh and West Bengal. The main action areas under the programme would be nutrition, health, sanitation, environmental hygiene and education.

UNESCO Commission being reconstituted

The Indian National Commission for cooperation with UNESCO is to be reconstituted. The Commission was last constituted in February 1978. According to UNESCO constitution it is open to the Government of India to dissolve and reconstitute the commission earlier than the four-year term. The Education Minister is the President and the Education Secretary, the Secretary-General of the Commission.

The Commission was set up in 1949 with the following functions: (a) to promote understanding of objects and purposes of UNESCO among the people of India; (b) to serve as a liaison agency between the Government of India and institutions concerned with the working for the advancement of education, science and culture; and (c) to advise the Union Government on matters relating to UNESCO.

UNESCO to extend teaching programme

The Unesco Director-General, Dr Amadau Mahtar M'Bow, said in Madras that Asian programme for innovation in education development sponsored by the United Nations Educational Scientific and Cultural Organisation has been successful and would be extended to developing countries in other regions of the world. This programme had helped to improve the quality of education with better teaching methods suited to local conditions. It had also enabled countries to exchange views directly and bridge gaps in mutual understanding. Dr M'Bow said that the conference of Education Ministers of Asia and Pacific some time back felt the need for vigorous implementation of the programme which he said had achieved important results. Unesco could help countries preserve their cultural aud monumental heritage without detriment to scientific development. Unesco would also lend a helping hand in the preservation of temples.

India participates in International Historical Congress

The 15th International Congress of Historical Sciences which met in Bucharest recently discussed peace problems, methodological questions and special themes in the chronology section. Five prominent Indian historians took part in the deliberations. Dr Satish Chandra, Chairman of the University Grants Commission was re-elected to the International Congress Bureau. Prof. S. Nurul Hasan and Dr A.R. Kulkarni presided over two sessions. Papers in the oral history section were presented by Dr Kulkarni and Dr B.R. Grover while Fr. Corria Afonso presented a paper on relations between continents and peoples.

AIU Memorandum to Prime Minister

Education was made a Concurrent subject some four years ago. In order to give content to this statutory change some further follow up action requires to be taken. For reasons into which it is not necessary to go here, this has not been done so far. It is therefore urged that the issue be taken up as a priority item. What specific proposals are to be embodied in the new legislation requires to be studied by a Special Group constituted for the purpose. Such a Group should be asked to report within 2-3 months so that there is no further delay in the implementation of the statutory change effected so many years ago.

2. In a resolution passed by the AIU a few weeks ago it has been suggested to the Union Minister for Education that a Standing Committee on Higher Education should be constituted under his chairmanship. Its membership should include the various coordinating and professional all-India bodies in the country for instance, the U.G.C., the AIU, the Medical Council of India, the Bar Council, the All-India Council of Technical Education, the Indian Council of Agricultural Research. This Standing Committee should act as a forum for consideration of issues dealing with the universities and other matrers concerning higher education. At the moment the only all-India body is the Central Advisory Board of Education. That body is however rather a large one and deals with all sectors of education. What is required is a body with a focus on higher education and with a somewhat professional character. The proposed Standing Committee can serve this need quite appropriately. It can meet twice a year and review problems and situations as they arise from time to time.

3. Universities have been faced with two recurrent problems for a long time. One of them relates to the uncertain quantum and far from precise procedure of financial aid to universities. The outlay on higher education has been at a reduced level for the last one year. What picture emerges when the Sixth Plan is finalised remains to be soon. It needs to be emphasised however that the higher educational sector ought to be maintained at a high level of performance. But the budgetary cut, if it must be carried out, ought to be so rationalised as not to be jeopardize the on-going programmes. The AIU passed a resolution in this behalf at its last Special General meeting and it has been forwarded to the Ministry of Education, the Planning Commission and other concerned bodies for appropriate action.

With regard to the procedures of release of grant, however, there is considerable room for rationalisation and streamlining. Whatever be the quantum made available to the universities, it requires to be distributed in a manner that is precise, predictable and far from cumbersome. The experience of those States where universities are not harrassed for lack of funds can be studied with profit by other States.

4. The second problem relates to the vulnerable nature of the Vice-Chancellor's post. For about two decades now, Vice-Chancellors have been increasingly under stress. While the nature of the crisis is deeper than is generally realised, it is the Vice-Chancellors who for obvious reasons are identified with whatever goes wrong in the universities and quite often they are required to give up office and sometimes even the various university bodies are superseded. Such decisions tend to undermine the credibility of the university system, apart from the fact that some individuals are hurt and humiliated in the process. It should be possible to avoid these situations as should be apparent from the fact that not all universities are affected by such situations. Apart from the institutional mechanism of the Standing Committee on Higher Education as proposed above, the services of the UGC and the AIU, the two all-India coordinating bodies, can also be utilised for the purpose.

5. Early in 1978 the Supreme Court declared the universities to be an industry. This was a new development which had the potential of dislocating the universities in no small degree. Apart from the demand for payment of bonus and such other things, there were various other complications that could arise. Consequently the Association submitted a memorandum to the then Prime Minister. Unfortunately the matter is still pending.

Sociology of Violence

(*Contd. from page 503*)

Second, much of the violence has the connivance and even collusion of at least a sizeable segment of the leadership. Some governments are known to have encouraged violence, especially in industries and educational institutions. Leadership of violent agitations has become a pass of entry into the higher deliberative chambers and into other cushy offices within the range of political patronage.

There have been organized agitations against constitutionally set up authorities. Violent situations have been so contrived that they dramatically become instruments for gaining mass sympathy and support. Tears are shed for the victims of violence, but alongside of human compassion, there is also a political angle to the sympathy that is lavished on such occasions. Almost all such regrettable incidents are politicised and in the process aggravated.

Third, the entrenched interests are engaged in a battle for the survival of their privilege. In the past they successful manipulated the levers of power to safeguard their interests. In the present context the tide of numbers is against them and their traditionally dumb followers are proving recalcitrant. In the past violence was the remedy of choice to keep the inferiors in their place. Now it does not always work the meek also hit back. Thus, violence continues to erupt from time to time.

Loss of faith in the institutions of society, in the long run, will be counter-productive to all interests and their representatives. What we need, therefore, is a national consensus covering recognized areas of violent conflict. A broad agreement on objectives of national policy is also indicated. The accent should now be on problem-solving. Also, there should be an imaginative programme of civic education to divert people from senseless destruction. The enforcement agencies should sharpen their remote sensing capabilities, anticipate likely problems, and sound their warning bells at the appropriate time. Their image has been badly disfigured. To refurbish it, they will have to change their technique of public relations and put in a more convincing performance. □

Population Awareness amongst the youth

(*Continued from page 502*)

members of staff. Literature for the clubs could be had free from the various agencies working in this field. Some specialised material could be had just like ordinary library books and journals.

After working the programme successfully for sometime it may be possible for FPAI, Education and Health Ministries etc and perhaps for UGC to give some financial grants to these cells/clubs in the universities and colleges.

Under a UNESCO scheme, the Government of India has recently initiated ambitious population education programmes in nine states of the country. It should be possible to earmark some amount for having useful population education programme in the Universities and colleges out of the grants given to the states for the purpose.

It may be mentioned here that the FPAI was responsible for starting a full-fledged Department of Population Studies at Tirupati where all sorts of courses/diplomas are being worked. Besides, the University at Tirupati has been playing a good leadership role in the state of Andhra Pradesh.

FPAI has also helped a small number of Indian Universities start Population cells. Kurukshetra is a good example where a full-fledged Population Education Club has been functioning for the last 3-4 years. It is financed jointly by the University and EPAI (Haryana Branch). The M.D. University at Rohtak has also initiated such a programme from this session at our suggestion. They are involving some of the affiliated colleges also.

If atleast one university (alongwith its constituent/affiliated colleges) in every state in India, could start some such programmes, it may be easier to spearhead the necessary consciousness all over. □

Conferences, Seminars and Workshops

October-December, 1980

Date	Title	Place	Sponsoring Body
1—15 Oct	Mathematical modelling of surface ground water systems	Bangalore	Indian Institute of Science
6—10 Oct	Handling & storage of fruits and vegetables	Chandigarh	National Productivity Council
6—10 Oct	Performance budgeting	Delhi	National Productivity Council
6—10 Oct	6th National Seminar on Management information & monitoring systems	Ooty	All India Management Association
6—11 Oct	Personnel Management	Madras	National Productivity Council
7 Oct-6 Nov	XXVII Course on hospital administration	New Delhi	National Institute of Health & Family Welfare
7—9 Oct	National Seminar on the Writings of Prem Chand	New Delhi	Centre of Indian Languages
8—10 Oct	Worker & Productivity	Bangalore	National Productivity Council
9—11 Oct	Annual Conference of the Cardiological Society of India and Thoracic Surgery Section of the Association of Surgeons of India	Pune	Cardiological Society of Inda
10—11 Oct	Workshop on environmental planning	Kanpur	Indian Instt of Chemical Engineering
13—15 Oct	Surface and Intersurface Properties in Material Science	Roorkee	Bhabha Atomic Research Centre
13—16 Oct	Finance for non-financial executives	Bangalore	National Productivity Council
16 Oct—15 Nov	Winter School in statistical Physics	Bangalore	Indian Institute of Science
27—31 Oct	Advanced Materials Management	Udaipur	National Productivity Council
27—31 Oct	Quality Control	Madras	National Productivity Council
27 Oct—1 Nov	Computer Systems performance evaluation & selection	Bombay	National Instt for Trg. in Ind. Engineering
27 Oct—1 Nov	Management information system	Srinagar	National Productivity Council
27 Oct—29 Nov	Health Planning Course	New Delhi	WHO & National Instt of Health & Family Welfare
28—31 Oct	Inter-personal relations	Bangalore	National Productivity Council
28 Oct—1 Nov	Performance Appraisal	Ahmedabad	National Productivity Council
October 1980	All India Workshop cum seminar on flight reliability and maintenance	Bangalore	Institution of Engineers (India)
October 1980	9th National Seminar of the Indian Association of Special Libraries and Information Centre	Nagpur	IASLIC
October 1980	Symposium on the theme : computer and control	Lucknow	Instt. of Elect. & Tele Engineering
Oct-Nov 1980	Summer Institute on theory and technology of modern steel making	Varanasi	Banaras Hindi University
3—29 Nov	Training Course on information storage and retrieval in health population and family welfare	New Delhi	WHO & Nat. Instt. of Health & Family Welfare National Documentation Centre
4—6 Nov	Programme on time management	Bangalore	All India Management Association
10—12 Nov	Symposium on plant disease problems under diversification of crop production in India	Ludhiana	Punjab Agricultural University
10—21 Nov	Analytical techniques for production personnel	Bombay	National Instt. for Trg. in Ind. Engineering
10—21 Nov	Management Information Systems—Workshop	Delhi	Indian Institute of Public Administration
11—14 Nov	Controls in management	Darjeeling	National Productivity Council
11—15 Nov	Management Science in Resource utilisation	Delhi	Indian Institute of Public Administration
17—28 Nov	Energy Management	Bombay	National Instt. of Trg. in Ind. Engineering
24 Nov-13 Dec	Advanced Reservoir Engineering	Dhanbad	Indian School of Mines
25—29 Nov	Corporate Planning ? Corporate Strategies	Delhi	National Productivity Council
26 Nov—3 Dec	Xth Course on Materials Management in hospitals	New Delhi	National Institute of Health & Family Welfare
26 Nov—6 Dec	Computers in Management	Delhi	Indian Institute of Public Administration
November 80	International Seminar on Sufi Teaching	Delhi	All India Jamiat-ul-Sufia
November 80	Seminar-cum-Workshop on flight safety	Delhi	Aeronautical Society of India
November 80	Symposium on instrumentation	Jaipur	Institute of Elect. & Tele. Engineering
November 80	35th National Conference on TB and Chest diseases	Bombay	Tuberculosis Association of India
1—12 Dec	Management Information Systems	Bombay	National Instt. of Trg. in Ind. Engineering
2 December	Top Management forum—The Management of changes	Madras	All India Management Association
2—5 Dec	Working Capital Management	Calcutta	National Productivity Council
2—9 Dec	International Conference on Industrial Tribology	Delhi	Indian Institute of Technology

Date	Title	Place	Sponsoring Body
4—5 Dec	National symposium on advances in non-destructive testing (Nuclear)	Bombay	Department of Atomic Energy & Bhabha Atomic Research Centre
4—6 Dec	Annual Seminar of Fertilizer Association of India	Delhi	Fertilizer Association of India
8—11 Dec	International Conference on Rheumatic fever and Rheumatic Heart desease	Delhi	All India Heart Foundation
8—12 Dec	Project Management for agricultural & agro-based industries	Ahmedabad	National Productivity Council
9—13 Dec	2nd International symposium on industrial and oriented basic electrochemistry	Madras	Electrochemical Science and Technology
10—12 Dec	Scientific decision-making	Delhi	Indian Institute of Public Administration
10—20 Dec	Short training course on genetic aspects of malaria	New Delhi	Department of Population Genetics & Human Development, National Institute of Health & Family Welfare
11—12 Dec	2nd National Seminar on Management of foreign technical collaboration in India	Bombay	All India Management Association
14—18 Dec	Conference of the Federation of Asian and Oceanian Biochemists	Bangalore	Indian Institute of Science; Society of Biological Chemists
14—18 Dec	Golden Jubilee celebrations of Society of Biological Chemists (India)	Bangalore	Society of Biological Chemists
15—19 Dec	International Workshop on Pigeonpeas	Patancheru (AP)	ICRISAT
15—20 Dec	Manager Development	Delhi	National Productivity Council
15—24 Dec	Financial Management Techniques	Delhi	Indian Institute of Public Administration
15 Dec—3 Jan	Urban Management	Delhi	Indian Institute of Public Administration
17—20 Dec	Annual Session of the Indian Institute of Chemical Engineers	New Delhi	Indian Institute of Chemical Engineering
22—27 Dec	Metal mining systems	Dhanbad	Indian School of Mines
27—29 Dec	All India English Teachers Conference	Varanasi	Banaras Hindu University
29 Dec—3 Jan	Executive effectiveness	Srinagar	National Productivity Council
3rd week of Dec	5th Conference of the Agricultural Research Statisticians	Delhi	Indian Agricultural Statistics Research Institute
December 80	Annual Convention of Chemists	Bombay	Indian Chemical Society
December 80	Annual Conference of the Anatomical Society of India	Patna	Anatomical Society of India & Gandhi Medical College, Bhopal
December 80	40th Annual Conference of the Indian Society of Agricultural Economics	Bombay	Indian Society of Agricultural Economics
December 80	International Symposium on industrial and oriented basic electrochemistry	Madras	Society for the Advancement of Electrochemical Science and Technology
December 80	24th Technical Convention of IETE and exhibition	Delhi	Institute of Electronics and Telecommunication Engineers

Subject Index

Date	Title	Place	Sponsoring Body
Aeronautics			
October 1980	19th All India Workshop cum seminar on flight reliability and maintenance	Bangalore	Institution of Engineers (India)
November 1980	Seminar cum Workshop on flight safety	Delhi	Aeronautical Society of India
Agriculture			
10—12 Nov	Symposium on plant disease problems under diversification of crop production in India	Ludhiana	Punjab Agricultural University
4—6 Dec	Annual Seminar of Fertiliser Association of India	Delhi	Fertiliser Association of India
8—12 Dec	Project Management for agriculture & agro-based Industries	Ahmedabad	National Productivity Council
15—19 Dec	International Workshop on Pigeonpeas	Patancheru (AP)	ICRISAT
Computers			
27 Oct—1 Nov	Computer Systems performance evaluation & selection	Bombay	National Instt. for Trg. in Ind. Engg.
October 1980	Symposium on the theme : Computer and Control	Lucknow	Instt. of Electronics & Tele. Engineers
26 Nov—6 Dec	Computers in Management	Delhi	Indian Institute of Public Administration

Date	Title	Place	Sponsoring Body
Economics & Finance			
December 1980	40th annual conference of the Indian Society of Agricultural Economics	Bombay	Indian Society of Agricultural Economics
Electricity and Electronics			
December 1980	24th Technical Convention of IETE exhibition	Delhi	Instt. of Electronics & Tele. Engineers
Energy			
17—28 Nov	Energy Management	Bombay	National Instt. for Trg. in Ind. Engg.
Engineering			
13—15 Oct	Surface and Intersurface Properties in Material Sc.	Roorkee	Bhabha Atomic Research Centre
2—9 Dec	International Conference on Industrial Tribology	Delhi	Indian Institute of Technology
17—20 Dec	Annual Session of the Indian Institute of Chemical Engineers	New Delhi	Indian Institute of Chemical Engineers
9—13 Dec	2nd International Symposium on industrial and oriented basic electrochemistry	Madras	Society for Advancement of Eelectrochemical Science and Technology
4—5 Dec	National Symposium on advances in non-destructive testing (Nuclear)	Bombay	Department of Atomic Energy and Bhabha Atomic Research Centre
Environment & Pollution			
10—11 Oct	Workshop on environmental planning	Kanpur	Indian Institute of Chemical Engineers
Financial Management			
13—16 Oct	Finance for non-financial executives	Bangalore	National Productivity Council
2—5 Dec	Working Capital Management	Calcutta	National Productivity Council
15—24 Dec	Financial Management techniques	Delhi	Indian Institute of Public Administration
Food Technology			
6—10 Oct	Handling & storage of fruits and vegetables	Chandigarh	National Productivity Council
Instrumental			
November 1980	Symposium on instrumentation	Jaipur	Instt. of Electronics & Tele. Engg.
Library Science			
October 1980	9th National Seminar of the Indian Association of Special Libraries and Information Centre	Nagpur	IASLIC
Literature and Language			
7—9 Oct	National Seminar on the writings of Prem Chand	New Delhi	Centre of Indian Languages
27—29 Dec	All India English Teachers Conference	Varanasi	Banaras Hindu University
Management			
6—10 Oct	6th National Seminar on Management Information & Monitoring Systems	Ooty	All India Management Association
6—10 Oct	Performance budgeting	Delhi	National Productivity Council
27 Oct—1 Nov	Management Information System	Srinagar	National Productivity Council
4—6 Nov	Programme on time Management	Bangalore	All India Management Association
10—21 Nov	Management Information Systems—Workshop	Delhi	Indian Institute of Public Administration
11—14 Nov	Controls in Management	Darjeeling	National Productivity Council
11—15 Nov	Management Science in Resource utilisation	Delhi	Indian Institute of Public Administration
25—29 Nov	Corporate planning—Corporate strategies	Delhi	National Productivity Council
1—12 Dec	Management Information Systems	Bombay	National Instt. for Trg. in Ind. Engg.
2 Dec	Top Management forum—The Management of Changes	Madras	All India Management Association
10—12 Dec	Scientific decision-making	Delhi	Indian Institute of Public Administration
15—20 Dec	Manager development	Delhi	National Productivity Council
29 Dec—3 Jan	Executive effectiveness	Srinagar	National Productivity Council
11—12 Dec	2nd National Seminar on Management of foreign technical collaboration in India	Bombay	All India Management Association
Marketing Management			
6—10 Oct	National Advanced Marketing Seminar (Corporate Goals & Marketing Strategies)	Mussoorie	All India Management Association

Date	Title	Place	Sponsoring Body
Materials Management			
27—31 Oct	Advanced Materials Management	Udaipur	National Productivity Council
26 Nov—3 Dec	Xth Course on Materials Management in hospitals	New Delhi	National Instt. of Health & Family Welfare
Mathematics			
3rd week of Dec	V Conference of the Agricultural Research Statisticians	Delhi	Indian Agricultural Statistics Research Institute
Medicine & Public Health			
7 Oct—6 Nov	XXVII course on hospital administration	New Delhi	National Instt. of Health & Family Welfare
9—11 Oct	Annual Conference of the Cardiological Society of India and Thoracic Surgery Section of the Association of Surgeons of India	Pune	Cardiological Society of India
27 Oct—29 Nov	Health Planning Course	New Delhi	WHO & National Instt. of Health and F. Welfare
November 1980	35th National Conference on TB & Chest diseases	Bombay	Tuberculosis Association of India
November 1980	Workshop on Nutrition for trainees of Community Health Workers	Delhi	National Institute of Nutrition & WHO
3—29 Nov	Training Course on information storage and retrieval in health, population and family welfare	New Delhi	National Documentation Centre; National Instt. of Health & Family Welfare
8—11 Dec	International Conference on Rheumatic fever and Rheumatic Heart disease	Delhi	All India Heart Foundation
10—20 Dec	Short training course on genetic aspects of malaria	New Delhi	Deptt. of Pop. Genetics & Human Dev. National Instt. of Health & Family Welfare
December 1980	Annual Conference of the Anatomical Society of India	Patna	Anatomical Society of India Gandhi Med. College, Bhopal
Mining & Metallurgy			
Oct—Nov	Summer Institute on theory and technology of modern steel making	Varanasi	Banaras Hindu University
22—27 Dec	Metal mining systems	Dhanbad	Indian School of Mines
Personnel Management			
6—11 Oct	Personnel Management	Madras	National Productivity Council
8—10 Oct	Worker & Productivity	Bangalore	National Productivity Council
28—31 Oct	Inter-personal relations	Bangalore	National Productivity Council
28 Oct—1 Nov	Performance appraisal	Ahmedabad	National Productivity Council
Philosophy			
November 1980	International Seminar on Sufi teaching	Delhi	All India Jamiat-ul-Sufia
Production Management			
27—31 Oct	Quality Control	Madras	National Productivity Council
10—21 Nov	Analytical techniques for production personnel	Bombay	National Instt. for Trg. in Ind. Engg.
Public Administration			
15 Dec—3 Jan	Urban Management	Delhi	Indian Institute of Public Administration
Rural Development & Population Control			
Science & Technology			
16 Oct—15 Nov	Winter school in statistical physics	Bangalore	Indian Institute of Science
14—18 Dec	Conference of the Federation of Asian and Oceanian Biochemists	Bangalore	Society of Biological Chemists, Indian Institute of Science
14—18 Dec	Golden Jubilee celebrations of Society of Biological Chemists (India)	Bangalore	Society of Biological Chemists
December 1980	Annual Convention of Chemists	Bombay	Indian Chemical Society
Water Resources			
1—15 Oct	Mathematical modelling of surface ground water systems	Bangalore	Indian Institute of Science
24 Nov—13 Dec	Advanced Reservoir Engineering	Dhanbad	Indian School of Mines,

Further details can be had from:
The Librarian, British Council Library,
AIFACS Building, Rafi Marg, New Delhi-110001

CLASSIFIED ADVERTISEMENTS

UNIVERSITY OF BOMBAY

Bombay-400032

Applications are invited in the prescribed form for the following posts in the University :

	Post	Department/Centre
1.	Professor of Agricultural Economics	Economics
2.	Reader in Economics	-do-
3.	Two Lecturers (Temporary appointment for a period not exceeding 25-4-1982)	Sociology
4.	Reader in Politics	Civics & Politics
5.	Reader in American Government & Politics	-do-
6.	Lecturer in Chemistry	Chemistry
7.	Lecturer (Temporary appointment for a period not exceeding 30-6-1983)	History
8.	Reader	Geography
9.	Lecturer	Computer Science
10.	Lecturer in Swahili	Centre of East African Studies (Area Studies Programme)
11.	Four Professors	Centre of Advanced Study in Mathematics
*12.	Five Readers	-do-
*13.	Two Lecturers	-do-
*14.	Two Lecturers	Mathematics
15.	Reader in Physics	Centre of Advanced Study in Applied Chemistry.
16.	Reader in Chemical Engineering	Chemical Technology
17.	Reader in Biochemical Engineering	-do-
18.	Reader in Colour Chemistry	-do-
19.	Lecturer in Applied Biochemistry	-do-
20.	Lecturer in Inorganic & Physical Chemistry.	-do-

The pay-scales of the posts are as follows :

Professor : Rs. 1500-60-1800-100-2000-125/2-2500.

Reader : Rs. 1200-50-1300-60-1900

Lecturer : Rs. 700-40-1100-50-1600.

In addition to pay, Dearness Allowance, House Rent Allowance and Compensatory Local Allowance will be paid according to the University rules. All posts, other than the posts at serial numbers 3 and 7, carry the benefits of Provident Fund and Gratuity according to the University rules. A higher starting pay may be given to persons appointed to the posts of Professor and Reader in special cases. The appointments to the posts, other than the posts at serial numbers 3 and 7, will be on probation for two years but the probationary period may be reduced by the Executive Council in special cases. Other things being equal preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the requirements regarding qualifications, experience etc. laid down for the posts; provided, however, that if no candidate is available from scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified persons from among the other candidates.

The **minimum qualifications** prescribed for the posts, other than the posts at serial numbers 15, 16, 17, 18 and 19 are as under :

Professor

An eminent scholar with published work of high quality, actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

Or

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader

Good academic record with a Doctor's degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer

(a) A Doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a Foreign University.

Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M.Phil. or equivalent degree or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organization on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

Explanation

(1) For determining consistently good academic record, a candidate should either have an average of 55% marks at the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% marks at each of two examinations separately.

(2) For determining high second class, the mid-point between the minimum percentages of marks fixed by a University for award of second class and first class may be taken.

The **additional qualifications** prescribed for the posts at serial numbers 1, 2, 4 to 13 and 20 mentioned above are as under :

1. **Professor of Agricultural Economics** — Specialization in Agricultural Economics, in Rural and Tribal Development and Rural Institutions.

2. **Reader in Economics**—Specialization in Economics of Education. Preference will be given to a candidate with a good background in Economics of Education.

4. **Reader in Politics**—Experience of teaching and/or research must be in Political Theory and Political Thought.

5. **Reader in American Government & Politics**—Experience of teaching and/or research must be in American Government & Politics and Foreign Policy & Diplomacy.

6. **Lecturer in Chemistry**—The Doctor's degree or equivalent research work must be in Organic Chemistry. A candidate having experience of teaching Organic Chemistry will be preferred.

7. **Lecturer (History) (Temporary appointment for a period not exceeding 30-6-1983)**—Specialization in American

History/Economic History of India will be desirable.

8. **Reader (Geography)**—Specialization in Spatial and Regional Planning/Industrial Geography.

9. **Lecturer (Computer Science)**—At least two years' experience of teaching or working in a research and development area related to computer science will be desirable.

10. **Lecturer in Swahili**—Diploma in Swahili Language and Literature essential.

11. **Four Professors (CAS in Mathematics)**—Specialization in Pure Mathematics.

12. **Five Readers (CAS in Mathematics)**—Specialization in Pure Mathematics.

13. **Two Lecturers (CAS in Mathematics)**—Specilization in Pure Mathematics.

20. **Lecturer in Inorganic & Physical Chemistry (Chemical Technology)** —

(i) Specialization in Surface Chemistry, Polymer Chemistry, Electro-Chemistry or Calorimetry.

(ii) Experience in lecturing and conducting advanced practical work in Physical and Inorganic Chemistry.

The **qualifications** prescribed for the posts at serial numbers 15, 16, 17, 18 and 19 are as under :

15. **Reader in Physics (CAS in Applied Chemistry)**

(a) First Class M.Sc. degree in Physics from a recognised University with specialisation in Solid State Physics, Spectroscopy or Material Science.

(b) Doctorate degree in Physics in any one of the following fields:

X-ray diffraction or X-ray Spectroscopy, Electron Microscopy or electron diffraction specially of polymers or organic solids. Electrical, optical, dielectric or mechanical properties of organic solids or polymers.

(c) At least five years' teaching and/or research experience after obtaining the doctorate degree in any of the above fields supported by good published work in standard journals.

16. **Reader in Chemical Engineering**

(a) Consistently good academic record with a basic degree in Chemical Engineering as well as a Doctorate degree. Research publications in journals of international standards. At least five years' research/professional experience. Some consulting experience will be desirable.

(b) Specialization in (i) mass transfer with specific reference to interaction with hydrodynamics; (ii) process dynamics and control.

17. **Reader in Biochemical Engineering**

(a) Consistently good academic record with a doctorate degree in Biochemical Engineering or Chemical Technology/Chemical Engineering with specialization in Biochemical or Food Engineering.

(b) About five years' experience of teaching and/or research or in Food/Fermentation industry in a responsible position.

18. **Reader in Colour Chemistry**

(a) Consistently good academic record with a doctorate degree in Technology of Intermediates and Dyes or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innnovation in teaching methods or (iii) production of teaching materials

(b) About five years experience of teaching and/or research in the Dyestuff field provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

19. **Lecturer in Applied Biochemistry** Consistently good academic record with a Master's degree in Chemical Technology with experience of teaching, research or in industry or a Doctorate degree in Chemical Technology.

OR

Consistently good academic record with a Doctorate Degree in Biochemistry with specialization in Food Biochemistry, Nutrition or Food Toxicology with experience of teaching, research or in food or allied industry.

Eight copies of the application in the prescribed form, together with attested copies of certificates, should be sent in an envelope superscribed with "Application for the post of———" so as to reach the Registrar (Teaching Appointments Unit), University of Bombay, Bombay-400032, **on or before Friday, 17th October, 1980.** Candidates from abroad, Andaman & Nicobar Islands and Lakshadweep may send their applications so as to reach the Registrar **on or before Friday, 31st October, 1980.**

Applications recevied after the last date will not be considered. Prescribed forms of application can be had in person, free of charge, from the Teaching Appointments Unit, Registrar's Office, (Room No. 110), University of Bombay, Fort, Bombay-400032.

Requests for supply of a set of eight prescribed forms by post should be made sufficiently in advance with a self-addressed stamped (Re. 1.80) envelope of the size of 27 x 12 cms.

Candidates should send with every application a crossed Indian Postal Order or a crossed Demand Draft on a scheduled bank for Rs. 10/- drawn in favour of the Registrar, University of Bombay, payable at Bombay, as application fee. Candidates who apply for more than one post should send separate applications along with the requisite fee by means of a crossed Indian Postal Order/Demand Draft. Money order or cheques or cash will not be accepted by the University. The fee will not be refunded once an application has been received by the University.

Incomplete applications and applications without the requisite fee will not be considered. Applications on plain paper will not be considered.

Candidates are advised to satisfy themselves before applying that they possess the prescribed qualifications and it is for the candidates themselves to ensure that they possess the prescribed qualificaions. No inquiry asking for advice as to eligibility will be entertained.

Candidates called for interview will have to present themselves at their own expenses.

Canvassing, direct or indirect, will be a disqualification.

Note:—**Persons who has applied for the posts mentioned at serial numbers 12, 13 and 14 in response to the advertisement dated 21st December, 1978 should apply afresh if they are interested in the posts.**

G. M. Rajarshi
REGISTRAR

BIDHAN CHANDRA KRISHI VISWA VIDYALAYA

P. O. MOHANPUR, WEST BENGAL

Advertisement No. Apptt/5/80

Applications are invited for filling up the following posts in the scales mentioned below plus other allowances as admissible under the rules of the Viswa Vidyalaya :

A. **Comptroller** in the scale of Rs. 1500-60-1800-100-2000-125/2-2500/-

Qualification : Essential

(i) Uniformly good academic record with a B+Master's Degree or its equivalent professional qualification;

(ii) Membership of the Institute of Chartered Accountants of India or experience in I.A.A.S. and equivalent service;

OR

A Master's Degree in Business Administration with specialisation in Finance.

In case of candidates holding professional qualifications as in item (ii), the requirement of M. A. Degree may be waived.

(iii) At least 15 years experience in a Govt. or in a University or in a Institute of Higher Learning in a high administrative post involving supervision, control, planning and Audit;

(iv) Age not less than 40 years. Relaxable in case of exceptionally qualified candidates.

(v) Preference will be given to Master's degree in Commerce.

B. Director of Farms in the scale of Rs. 1500-60-1800-100-2000-125/2-2500/-

Qualification : Essential

(i) Uniformly good academic career with at least a B+Master's Degree in Agronomy or recognised equivalent qualifications following honours degree;

(ii) At least 10 years' experience in the management of farms in a senior administrative position;

(iii) Knowledge of Agricultural conditions in the country preferably in the State of West Bengal.

Desirable

(i) A Doctorate Degree or publication of merit in allied subjects;

(ii) Proven capacity of leadership in organisation and management of large size State or University farms.

Age : Below 55 years.

C. Professor of Dairy Engineering (One Post) in the scale of Rs. 1500-60-1800-100-2000-125/2-2500/-

Qualification : **Essential** : (i) A first or high second class Master's Degree in Dairy Engineering.

(ii) Ten years experience in teaching and/or research as evidenced from published paper in Institution or University standard at the post-graduate level of which five years must be in a post equivalent to Reader.

(iii) Specialised knowledge in one or more specialised fields with experience of guiding research.

(iv) Preference shall be given to candidates having Doctorate Degree with professional/scientific work of outstanding merit.

(v) A Basic professional degree in Agriculture / Mechanical / Electrical Engineering at the graduate level is essential.

Age : Preferably below 55 years.

D. University Engineer in the scale of Rs. 1200-50-1300-60-1900/-

Qualification : **Essential** : (i) Uniformly good academic record with 1st. or high 2nd class graduation in Engineering (Civil).

(ii) At least 10 years' experience in a position involving supervision, control and planning of construction work under Govt. / Quasi-Govt./University/Institute of higher learning;

(iii) Age not below 35 years. Relaxable in the case of exceptionally qualified candidates.

Desirable : A post-graduate degree in Civil Engineering.

OR

Experience of 5 years in large scale industrial concern for a position involving decision making in planning, estimating, designing and supervision of construction.

E. Medical Officer (One Post) in the scale of Rs. 1200-50-1300-60-1900/-

Qualification : **Essential** : (i) An M.B.B.S. Degree recognised by the I.M. C.

(ii) At least 10 years' experience of medical practice in a Government/ Military/Quasi Government hospitals;

(iii) Age not below 35 years. Relaxable in the case of exceptionally qualified candidates;

(iv) 10 years' experience in hospital may be relaxed in case of private practice or reputation for 15 years.

Desirable : Post-graduate degree in any of the branches of the Medical Science or Diploma in Public and Tropical Medicine.

F. Assistant Director of Extension (Training Programme) in the scale of Rs. 1200-50-1300-60-1900/-

Qualification : Essential

(i) A first or high second class Master's Degree in Agriculture/Veterinary/ Animal Sciences or an equivalent degree of a foreign University;

(ii) A Doctorate Degree in the relevant subject or equivalent published work of a good record of research;

(iii) Five years' experience of teaching/research / Extension, of which three years must be as a Lecturer or in a post of equivalent rank.

Desirable

(i) Experience of conducting Trg. Programme / Communication Work.

(ii) Experience of conducting demonstrations with the farmers.

Age : Below 50 years.

F. Assistant Director of Extension (Veterinary) in the scale of Rs. 1200-50-1300-60-1900/-

Qualification: Essential

(i) A first or high second class Master's Degree in Veterinary Science or equivalent qualification of a foreign University;

(ii) A Doctorate Degree in the relevant subject or published work of a good record of research;

(iii) Five years' experience of teaching/research/Extension of which three years must be as Lecturer or in a post of equivalent rank.

Desirable

(i) Experience of conducting training programme/communication work.

(ii) Experience of conducting demonstration with the farmers.

Age : below 50 years.

H. Superintendent of Farms (One Post) in the scale of Rs. 1200-50-1300-60-1900/-

Qualification: Essential

(i) Uniformly good academic record with a B+ Master's Degree in Agronomy;

(ii) At least 10 years' experience in farm management in a Government or University Farm;

(iii) Age not less than 35 years. Relaxable in the case of exceptionally qualified candidates;

(iv) Knowledge of Agricultural condition in the country particularly in West Bengal will be given preference.

Desirable

A Doctorate degree or published research work of equal merit.

I. Reader in Dairy Engineering (One Post) in the scale of Rs. 1200-50-1300-60-1900/-

Qualification: Essential

(i) A first or high second class Master's Degree in Dairy Engineering or equivalent Degree of a foreign University;

(ii) Five years' experience in teaching and/or Research as evident from published papers in Institution or University standard of which three years must be in a post in the rank of Lecturer;

(iii) Preference shall be given to candidates having Doctorate Degree or published work of equal merit;

(iv) A Basic professional degree in Agriculture/Mechanical / Electrical Engineering at the graduate level is essential.

AGE : Preferably below 50 years.

J. Lecturer in Dairy Engineering (One Post) in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in Dairy Engineering or equivalent degree of a foreign University;

(ii) Two years' teaching/research experience in any Institution of repute;

(iii) Preference shall be given to candidates having Doctorate Degree or published work of equal merit;

(iv) A Basic professional degree in Agriculture/Mechanical/Electrical Engineering of the graduate level is essential.

Age: Below 45 years.

K. Lecturer in Radiology (One Post) in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent degree of a foreign University;

(ii) A Doctorate Degree in the subject concerned or published research work of an equally high standard.

Age : Below 45 years.

L. Lecturer in Veterinary Medicine (One Post) in the scale of Rs. 700-40-1100-50-1600/-

Qualification : Essential

(i) A consistently good academic record with first or high second class Master's Degree in the subject or equivalent degree of a foreign University.

(ii) A Doctoral Degree in the subject concerned or published research work of an equally high standard.

(iii) Specialisation in Preventive Medicine.

Age : Below 45 years.

M. Subject Matter Specialist—Three Posts : One each for Extension, Plant Pathology & Entomology under National Demonstration Scheme in the scale of Rs. 700-40-1100-50-1600/-

Qualification : **Essential** : (i) A consistently good academic record with first or high second class Master's Degree in the relevant subject or equivalent degree of a foreign University

(ii) A Doctoral Degree in the subject concerned or published research work of an equally high standard.

Desirable : (i) Two years' experience of teaching/Research/Extension work in any Institute of repute;

(ii) Experience of conducting Demonstration/Farm Advisory Work in case of Extension and experience of identification of crop diseases/insect posts and their control measures in case of Plant Pathology and Entomology;

(iii) Experience of conducting Training programmes/Communication work in case of Extension and experience of conducting demonstrations in farmer's field in case of Plant Pathology and Entomology;

(iv) For post-graduate degree in Plant Pathology, Agril. Entomology as elective subject at under-graduate level and vice-versa.

Age : Below 45 years.

N. Research Scientist III—One Post **under the Scheme 'Survey Selection &**

Mass Production' in the scale of Rs. 700-40-1100-50-1600/-

Qualifications : Essential : (i) A consistently good academic record with first or high second class Master's Degree in Microbiology or Plant Pathology or Botany with specialisation in Microbiology or Mycology or equivalent degree of a foreign University (ii) A Doctoral Degree in the subject or published research work of an equally high standard.

Age : Below 45 years.

O. Veterinary Surgeon (One Post) in the scale of Rs. 600-35-670-40-870-45-1050-50-1250/-

Qualification: **Essential** (i) B.V.Sc. & A.H. Degree from the recognised University/Institution (ii) At least 5 years' experience of treatment & control of animal diseases in N.E.S. and C.D.P. Blocks (iii) Preference will be given to M.V.Sc. Degree holder.

Age : Preferably below 35 years.

N.B. (i) For the posts of Lecturer or of equivalent rank—if a candidate possessing a Doctorate Degree or equivalent research work is not available or is not considered suitable, the person possessing consistently good academic record may be considered for appointment on the condition that he/she will have to attain a Doctorate Degree or show evidence of research work of equivalent high standard within 5 years of his/her appointment failing which he/she will not be eligible to earn increments till he/she fulfils these requirements.

(ii) For the post under category 'L' Master's Degree should be followed by B.V.Sc. & A. H. Degree.

(iii) For the posts of Lecturer and equivalent posts preference will be given to the candidates having a basic degree in Agriculture or B.V.Sc. & A.H. as the case may be.

Experience and age limit may be relaxable on the recommendations of the Selection Committee in the case of candidates otherwise qualified. A high initial pay in the scale may be granted on the basis of qualifications, experiences and present emoluments.

Applications must be submitted in the prescribed form to be had from the office of the Registrar (Recruitment Section), Bidhan Chandra Krishi Viswa Vidyalaya, P..O. Mohanpur, Distt. Nadia West Bengal by remitting crossed Indian Postal Order for Rs. 8.00 (eight) in favour of the 'Bidhan Chandra Krishi Viswa Vidyalaya' between 11-30 A.M. and 4-00 P.M. on weekdays and between 11-30 A.M. & 1-00 P.M. on Saturdays.

Application forms may also be obtained by post by sending a self addressed envelope stamped Re. 0.45 (forty five paise) only and the necessary Postal Order.

Applications made otherwise are liable to be cancelled.

Persons already in employment should apply through proper channel.

Applications completed in all respects should be submitted to the Office of the Registrar (Receipt & Despatch Section) by the **30th September, 1980** in an envelope superscribed with the name of the post applied for.

Candidates called for interview will have to appear at their own cost.

REGISTRAR

JAMIA MILLIA ISLAMIA

Jamia Nagar, New Delhi-110025

Advertisement No. 5/80-81.

Applications on the prescribed form which can be had from the Registrar's Office on any day (except Sundays and Holidays) between 10.00 a.m. to 12.00 Noon or by sending a self addressed and duly stamped (30 paise) envelope of 10x23 cms., are invited along with the crossed postal order or Bank Draft of Rs. 3/- for the following posts so as to reach the Registrar by 1.00 p.m. on **6.10.1980.**

Ability to teach in Urdu and Hindi is a desirable qualification for teaching posts and knowledge of Urdu and Hindi is essential for non-teaching posts.

D.A., C.C.A., H.R.A., P.F., Gratuity, Pension etc. and such other benefits will be given according to Jamia rules.

Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.

Two Professors (Grade : Rs. 1500-2500): One each in Islamic Studies, Department of Islamic & Arab-Iranian Studies, and Education, Department of Teachers' Training & Non-Formal Education (permanent).

An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

One Reader in Physics (Grade : Rs. 1200-1900)—leave vacancy.

Good academic record with a first or high second class Master's Degree of an Indian University or an equivalent foreign qualification. A Doctorate Degree or equivalent published work in the subject concerned, and independent published work of a high standard in addition to the published work referred to above and at least 5 years experience of teaching Hons./Post-graduate classes or 10 years' experience of teaching undergraduate classes.

One Reader in Education (Grade Rs. 1200-1900)—permanent

Good academic record with a first or high second class Master's Degree of an Indian University or an equivalent foreign qualification. A Doctorate Degree or equivalent published work in the subject concerned, and independent published work of a high standard in addition to the published work referred to above and at least 5 years experience of teaching M.Ed. classes or 10 years experience of teaching B.Ed. classes.

Specialisation in Educational Research, Statistical methods and Educational Psychology will be a desirable qualification.

One Lecturer in Education (Civics), Grade: Rs. 700-1600 (leave vacancy).

(a) A Doctor's degree in Education or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class Master's degree in the relevant subject of an equivalent degree of a foreign university.

OR

(a) A Doctor's degree in the relevant subject or research work of an equally high standard; and,

(b) Consistently good academic record with an M. Phil. degree in Education or an equivalent degree of a foreign university.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed above.

Proficiency to teach Civics as well as History or Sociology to B.Ed. students will be desirable.

Eight Lecturers (Grade : Rs. 700-1600). One each in Physics (permanent), Organic Chemistry, Economics, Medieval Indian History, Urdu, Social Work, Arabic and Persian (leave vacancies)

(a) A Doctor's degree or **research** work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class Master's degree in a relevant subject or an equivalent degree of a foreign university.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed above.

For the post of Lecturer in Medieval Indian History knowledge of Persian is a desirable qualification.

For the post of Lecturer in Urdu, knowledge of Arabic and Persian supported by a Diploma or degree is a desirable qualification.

For the post of Lecturer in Social Work experience in teaching/training in Applied Social Sciences projects would be a desirable qualification.

For the post of Lecturer in Arabic, knowledge of written and spoken modern Arabic and ability to translate from Arabic into English and vise versa is required.

For the post of Lecturer in Persian, knowledge of Modern Persian (written and spoken) is required.

One Lecturer (Grade : Rs. 700-1300), Department of Technology (leave vacancy)

At least second class Degree in Civil Engineering, with two years teaching experience in some Engineering Institute.

One T.G.T. in Agriculture (Grade Rs. 440-750)—permanent

Essential :—(1) At least second class degree of a recognised university in the subject concerned. (2) A University degree/diploma in teaching.

Desirable

At least two years experience in teaching Middle /High classes of a High/Hr. Sec. School.

One Research Assistant (Sociology) Grade: Rs. 425-700 (leave vacancy).

1. At least a second class Master's degree or equivalent in Sociology from a recognised University.
2. Experience in and demonstrated ability for conducting social research, including quantitative techniques.
3. Adequate knowledge of Urdu and Hindi.

One Extension Assistant (Grade: Rs. 425-640)—temporary in the Department of Urdu Correspondence Course

An M.A. in Urdu with a minimum of 50% marks with an adequate knowledge of Hindi.

S.H. Naqvi
OSD/OFFG. REGISTRAR

OFFICE OF THE REGISTRAR DIBRUGARH UNIVERSITY

Dibrugarh : Assam

Advertisement No. 5/80

Applications are invited for the following posts :

1. Medical Officer—One
2. Director of Sports-cum-N.C.C. Liaison Officer—One
3. Assistant Librarian—One.

For National Adult Education Programme Unit of the University

4. Project Officer—One (Temporary)
5. Accountant - cum - Typist—One (Temporary)

For University Service & Instrumentation Centre

6. Senior Scientific Officer—One.
7. Senior Technical Assistant—One.
8. (i) Technician (C)—Three. (One each for Mechanical, Electronics and Glass Blowing)
   (ii) Technician (B)—Two. (One each for Mechanical and Glass Blowing).
   (iii) Technician (A)—One. Electronics.

Essential Qualifications and scale of pay

1. **Medical Officer**:—Rs. 600-40-800 (EB)—50-1300/-
   - (i) M.B.B.S. Degree from a recognised University or Board,
   - (ii) Minimum 2 (two) years of experience.
   - (iii) Age not more than 45 years on 1.4.80.
2. **Director of Sports** :—Rs. 800-45-1070(EB)-50-1570/-
   - (i) Must be Graduate; Master degree holder will be preferred.
   - (ii) Must have represented the State in any major games of athletics.
   - (iii) Must have some experience of working either in a University or in a College.
   - (iv) Those with experience in National Service and in organising Sports, Games and Cultural activities at University level will be preferred.
   - (v) Experience in conducting N.S.S. activities preferred.
   - (vi) Age not more than 45 years.
3. **Assistant Librarian**:—Rs. 600-40-800(EB)-50-1300/-
   - (i) Graduate with minimum of 2nd Class Degree in Library Science.
   - (ii) At least 5 years working experience in a University or Public Library.
   - (iii) Experience in Organisation & Administration of Library will be additional qualification.
   - (iv) Any post graduate degree/ Diploma will be an additional qualification.
4. **Project Officer**:—Rs. 700-40-900 (EB)-40-1100-50-1300/-
   - (i) Master Degree in Arts/ Science/Commerce.
   - (ii) Experience in N.A.E.P. & N.S.S.
   - (iii) Aptitude in Social Service.
   - (iv) Ability to work at the field level and ability to organise and supervise N.A.E.P. Projects in rural and urban areas.
   - (v) Willingness to undertake journeys in difficult terrain and areas.

Job description:—The Project Officer of the University will be required to assist the Programme Co-ordinators in all matters relating to the proper organisation and implementation of N.A.E.P./N.S.S. programme in Colleges and Institutions affiliated to this University.

Those between 30 to 35 years are eligible to apply.

5. **Accountant-cum-Typist**:—Rs. 285-9-330(EB)-10-420-11-475/- plus Rs. 50/- as special allowance.
   - (i) Pre-Degree passed from any recognised University or Board
   - (ii) 5 years office experience having knowledge in Accounts works.
   - (iii) Minimum Typing speed of 45 W.P.M.
6. **Senior Scientific Officer**:— Rs. 1100-50-1600/-
   - (i) At least Second Class Post-Graduate degree in Engineering or Science with 5 years experiences in R & D of instruments or in operation, repair and maintenance of modern instruments.
7. **Senior Technical Assistant** Rs. 550-25-750(EB)-30-900/-
   - (i) At least Second Class B.E./ B. Tech./M.Sc. Or a diploma in Engineering Or Electronics/ B.Sc. with 3 years experiences in operation of modern instruments and their repair and maintenance assistance in R & D in instrumentation (Candidates will be tested for their aptitude in instrumentation).
8. (i) **Technician (C)**:— Rs.380-12-500(EB)-15-560/-
   - (a) **Mechanical** :— Certificate Course from I.T.I. with 7 (seven) years experience.
   - (b) **Electronics** :— Certificate Course from I.T.I. in Electronics / Electrical Engineeering with 5 years experience.
   - (c) **Glass Blowing** :—10 years schooling and 4 years experiences.

   (ii) **Technician (B)** :—Rs. 320-8-400-10-450/-
   - (a) **Mechanical** :— Certificate Course from I.T.I. with 5 years experience.
   - (b) **Glass Blowing** :—10 years schooling and 2 years experience.

   (iii) **Technician (A)** :—Rs. 225-5-260-6-290(EB)-6-308/-
   - **Electronics**:—Certificate Course from I.T.I. in Electronics/ Electrical Engineering.

Six copies of applications in plain papers giving full bio-data including (1) Name in full (in block letters), (2) Father's name, (3) Date of birth, (4) (a) Permanent address; (b) Present address, (5) Present occupation; if any, (6) Detailed academic career from Matriculation/Higher Secondary / High School Leaving Certificate Examination and onwards showing Division/Class, aggregate percentage of marks, School/College/ University from which appeared (attested copies of marksheets, Certificates should be enclosed), (7) Details of appointments held with designation, duration and nature of works and name of employers, (8) Name and address of two referees not related to the candidate together with an application fees of Rs. 5/- (Rupees five) and Rs. 3/- (Rupees three) for the posts No. 5 and 8 by CROSSED INDIAN POSTAL ORDER drawn in favour of the Registrar, Dibrugarh University, should be sent in a sealed cover superscribed "Application for the post of" (Name of the post applied for), addressed to the Registrar, Dibrugarh University, Dibrugarh to reach him not later than **10-10-80**.

The number of the advertisement and name of the post applied for must be referred to in the application Persons in employment should apply through proper channel or with a 'No objection certificate' from the present employer. Application not in conformity with the above requirements will not be entertained.

Candidates will be required to appear at an interview if and when called for but no T. A. will be admissible for the purpose.

D. Pathak
REGISTRAR

UNIVERSITY OF RAJASTHAN
JAIPUR
Advertisement No. 19/80

Applications are invited (through proper channel, in case of those who are already in employment) so as to reach this office on or before Tuesday the **30th September, 1980** in the prescribed form available from the Registrar's Office on pre-payment of Rs. 4/- (Rs. 3/- extra in case required by post) for the undermentioned posts :

1. **Professor of Library Science**—in the grade of Rs. 1500-60-1800-100-2000-125/2-2500 (who will also be in-charge of the library).
2. **Director for Institute of Correspondence Studies**—in the scale of Rs. 1500-60-1800-100-2000-125/2-2500.
3. **Registrar**—1 in the grade of Rs. 1500-60-1800-100-2000-125/2-2500.
4. **Readers** : Geography—1, Psychology—1 and Indian Philosophy (for Special Assistance Programme in Philosophy)—1 in the grade of Rs. 1200-50-1300-60-1900.
5. **Lecturers**: Law—7, Jain Studies—1 and Economic Administration, & Financial Management—1 in the grade of Rs. 700-40-1100-50-1600.

The details of qualifications etc. may be obtained along with the prescribed application form or separately, as the candidate may desire. The benefits of Provident Fund, D.A. and other allowances will be admissible as per rules of the University. The candidates desiring to apply for more than one post, must send **separate** applications for each post. Candidates will be called for interview at their own expense. Incomplete applications shall be rejected without making any reference.

Persons who have already applied for the post of Director, Institute of Correspondence Studies, in response to the University Advertisement No. 10/79, dated **5.10.79** and notification dated **4.1.80**, need not apply afresh. They should however, intimate to the University that they are still desirous to be considered for the post applied for on the basis of their earlier application sent in response to the aforesaid advertisement. They may also send the particulars of their additional qualifications and experience etc. acquired since then on plain paper by due date.

Persons who have already applied for the post of Registrar in response to University Advertisement No. 12/80 dated **8.5.80** are required to apply **afresh.**

The University reserves the right to alter the number of posts in any cadre or subject. Higher start may be given to deserving candidates. Selected candidates are liable to be posted in any unit of the University.

Persons who resorted to unfairmeans at any exam. and were punished therefor OR were convicted by a Court of Law for any offence involving moral turpitude are not eligible. Retired persons also need not apply.

The University reserves to itself the right to consider persons who have not applied, particularly for the post of Professor.

REGISTRAR

Indian School of Mines

DHANBAD-826004

Advt. No. 420005/80 **Dated 28/8/1980**

The Indian School of Mines (deemed to be a University under the U.G.C. Act) invites applications for the following posts:

1. One Senior Technical Assistant: for the Deptt. of Electronics and Instrumentation: QUALIFICATIONS— (i) B.Sc. (Hons.) in Physics or Radio Physics or 3-year Diploma (or equivalent qualification) in Electronics, Radio Engg. or Instrumentation. (Essential but relaxable in case of candidates who have exceptional experience and knowledge in Electronics Instrumentation). (ii) Five years experience in repair, testing and maintenance of equipment such as Oscilloscopes, Recorders, Measuring Instruments, etc. (Essential). (iii) Ability to assist in the design and fabrication of electronics circuits and familiarity with IC's (Desirable).

2. One Senior Assistant (Public Relation) in the General Office: **QUALIFICATIONS** — (i) Graduate, with Post Graduate degree in Journalism (Essential), (ii) Three years journalistic experience or experience in Publicity and Public Relations Work (Essential), (iii) Experience in Writing feature articles and in editing, etc. (Desirable).

3. One Technical Assistant (Mechanical Engineering) for the Deptt. of Engg. & Mining Machinery: QUALIFICATIONS—Diploma in Mechanical Engineering OR Certificate in any Mechanical trade with Operation, repair and maintenance of mechanical equipment (especially Coal-cutting and other Mining Machinery) for a period of 2 years in case of candidates holding a diploma and 5 years in case of those holding a certificate.

4. One Technical Assistant (Electrical Engineering) for the Deptt. of Engg. & Mining Machinery: Lien vacancy for one year. QUALIFICATIONS—Diploma in Electrical Engg. OR Certificate in any Electrical trade with cable jointing, Vulcanising OR repairing of electronic equipment for a period of 2 years in case of candidates holding a diploma and 5 years in case of those holding a certificate.

5. One Technical Assistant for the Deptt. of Electronics & Instrumentation: QUALIFICATIONS—B.Sc. (Hons.) in Physics OR Radio Physics OR 3 years Diploma (OR equivalent Qualification) in Electronics Radio Engg OR Instrumentation. (Essential but relaxable in case of candidates who have exceptional experience and knowledge in Electronics Instrumentation) with repair, testing and maintenance of electronic equipment such as Oscilloscopes, Recorders, Measuring Instruments etc. (Essential).

Pay Scale: Rs. 550-900 for post at serial 1 & 2 and Rs. 425-700 for rest in addition, allowances admissible as per Govt. of India Rules sanctioned from time to time. Total emoluments currently amounts to Rs. 859.80 at the Rs. 550 stage and Rs. 679.70 at the Rs. 425 stage.

Age Limit: Not more than 30 years for STA/SAP and 25 years for TA/SA. Upper age limit relaxable by five years for SC/ST candidates. Age limit also relaxable in case of persons otherwise considered specially suitable.

General: Other things being equal, preference will be given to SC/ST candidates.

Further details and prescribed application forms are obtainable from Registrar, Indian School of Mines, Dhanbad-826 004 on sending a self-addressed envelope of size 30 cm × 12 cm affixed with postage stamps of the value of Rs. 3.45 only. Completed application forms should reach the Registrar on or before **30th September, 1980.** CANVASSING IN ANY FORM WILL BE TREATED AS DISQUALIFICATION.

S. P. VARMA
REGISTRAR

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Bharati, R. Contributions to the study of Schlicht functions. University of Madras.

2. Dubey, Vikrama Jeet. Studies in the differential geometry of Finsler spaces. University of Gorakhpur.

3. Khapate, Basavaraj Shivabasappa. Some problems in viscoelastic and MHD flows. Karnatak University.

4. Shafiullah. Plane wave solutions of various field equations in general relativity and unified field theory. University of Gorakhpur.

5. Singh, Kaushal Kumar. Non-equilibrium flows in non-conducting and conducting fluids. University of Gorakhpur.

Physics

1. Asokamani, R. Electron energy bands of Mg, Tc and Sr and the study of some of their physical properties. University of Madras.

2. Chakoo, K.J. Study of the spectra of diatomic molecules and BiF, SbO and SbO^+. M.S. University of Baroda.

3. Desai, T.S. Luminescence studies with biomolecular system. University of Poona.

4. Govindarajan, T. R. Some studies on relativistic wave equations in external fields. University of Madras.

5. Gupta, Virender Kumar. Scaling and 'A' dependence of multiplicity in hardron-nucleus interactions at energies = 20GeV. University of Jammu.

6. Kesavaraju, V. Studies in solid state physics : Fabrication of solid state pulse interferometer and measurement of third order elastic moduli of binary Al-alloys. Sri Venkateswara University.

7. Malhotra, Bansi Dhar. Studies of positron annihilation and phase transitions in some liquid crystals. University of Delhi.

8. Mulla, Mohamed Farooq Ramzan. Studies on some aspects of luminescence in $CaSO_4$: Dy: Bi phosphors. Shivaji University.

9. Nandi, Pushpalata Narayanadas. Electrical, dielectric and thermo gravimetric studies in some hydrated metal sulfates. Nagpur University.

10. Soni, Ram Swaroop. Luminescence studies of zinc oxide phosphors. University of Saugar.

Chemistry

1. Agarwal, Chander Mohan. Synthetic investigation on dyes, azlactones and coumarins. Awadhesh Pratap Singh University

2. Bansal, Vijaya. Synthetic investigations on azlactones, coumarins and acid hydrazides. Awadhesh Pratap Singh University.

3. Bevinakatti, Hanamanthasa Shankarasa. Heterocyclic analogs of chloramphenicol. Karnatak University.

4. Bhattacharya, B. K. Search for new heterocyclic pesticides with special reference to their herbicidal activity. University of Gorakhpur.

5. Damle, H.G. Studies in molten salt binary mixtures. University of Poona.

6. Deshmukh, Suhas Keshavrao. Kinetics and mechanism of base hydrolysis of octahedral cobalt (III) complexes. Shivaji University.

7. Garg, Urmila. Studies on fluorine containing heterocycles of biological interest. University of Rajasthan.

8. Kailash Wati Devi. Complex formation in molten salts : Association constants of single and mixed silver-halide complexes in molten (Na, K) NO_3—Ba $(NO_3)_2$ as solvent. University of Delhi.

9. Khajuria, Chander Mohan. Thermal decomposition of copper (II) and zinc (II) carboxyalates. University of Jammu.

10. Khanna, P.N. Useful synthons of biologically active compounds. University of Poona.

11. Lakshmi Narayan, Valluri. Study of triterpenes from Callicarpa arborea Roxb. and Swietenia mahagoni Linn. Andhra University.

12. Mehta, A.L. Studies on drug potentials. Saurashtra University.

13. Mishra, Byash. Thermodynamic studies on thermo-osmotic phenomena. University of Gorakhpur.

14. Mohan Singh. Molecular interactions in binary mixtures of non electrolytes. Maharshi Dayanand University.

15. Mukherjee, Madhab Narayan. Studies in Condensed ring system. Visva-Bharati.

16. Murali Mohan, K. Studies in oxidation with chromium (VI). University of Madras.

17. Nayak, Ashutosh. Studies on the synthesis of (a) Multiheteromacrocycles ; (b) Polymethin dyes for structure spectra correlation; and (c) Nitrogen and sulphur containing heterocyclic compounds of pharmacological importance. D.Sc. Sambalpur University.

18. Niranjan, Vijay Singh. Synthetic studies in the field of dyes and chemotherapeutic agents. Awadhesh Pratap Singh University.

19. Patel, Ghanshyam Hathibhai. Study of mesomorphism and mixed mesomorphic state. M.S. University of Baroda.

20. Patel, Jashubhai Bakorbhai. Studies on poly (arylene, ethylenes), tercopolymers and their metal chelates. Sardar Patel University.

21. Patel, M.S. Studies on properties of solutions by physical methods : Electrochemical studies on cadmium Schiff base complexes. Saurashtra University.

22. Pitke, Pradeep Madhavrao. Studies on tamarind kernel oil. M.S. University of Baroda.

23. Saha, Swapan Kumar. Studies on the behaviour of inorganic and organic cations towards some polyelectrolytes. North Bengal University.

24. Sharma, Susheela. Kinetics and mechanism of hydrolysis of di-2 methoxy, tri-2 methoxy and mono isopropyl ortho phosphates. Jiwaji University.

25. Vig, Manju. Syntheses of some modified steroids. Panjab University.

26. Vijaya Raju, Kurimella. Some new analytical applications of iron (II) in phosphoric acid medium. Andhra University.

Earth Sciences

1. Nayak, Shailesh Rameshchandra. Geology of the Bauxite deposits of Kutch and Valsad Districts with special reference to their mode of occurrence, genesis and economic utility. M.S. University of Baroda.

2. Shirke, Jaiprakash Madhavrao. Geology of the fireclay deposits of Saurashtra, Gujarat with special reference to their occurrence, origin and industrial applications. M.S. University of Baroda.

3. Wishve, Vijay. Studies on the Qazi Nag granites, Baramulla District, Kashmir Himalaya, University of Jammu.

Engineering & Technology

1. Chaudhari, Ravindranath Teniram. Thermoluminescence of the ultraviolet and X-ray irradiated thallium—doped potassium bromide. M.S. University of Baroda.

2. Jha, Rameshwar. Application of Popov type stability conditions in electrical machine analysis. Panjab University.

3. Suryanarayan, A. Dynamic behaviour, frequency response and optimal control of a dialyser. Sambalpur University.

BIOLOGICAL SCIENCES

Biochemistry

1. Desai, Harsha Vishnuprasad. Studies on argine metabolism in germinating seeds. M.S. University of Baroda.

2. Joshi, Sharad Ramrao. Utilization of bagasse for the production of single cell protein. Nagpur University.

Microbiology

3. Gill, Prem Pal. Metabolic alterations during biotin deficiency in Aspergillus nidulans. M. S. University of Baroda.

4. Purandare, A.G. Nitrogen fixation in some bacteria grass association. University of Poona.

Marine Biology

1. Kuppusamy, V. Biology and physiology of a woodboring teredinid with reference to the effects of temperature and salinity on the physiological and biochemical changes in Lyrodus pedicellatus. University of Madras.

Botany

1. Aleykutty, K.M. Morpho taxonomic studies in Ranales. Sardar Patel University.

2. Barlinge, Subhash Gunwantrao. Morphological investigations of the flora of Deccan intertrappean series of India, including palaeopalynology. Nagpur University.

3. Behera, Niranjan. Ecology of soil fungi in some tropical soils of Orissa, India. Sambalpur University.

4. Bhagwanani, Pushpa Pritamdas. Floristic and vegetational study of the Gujarat coast, Cambay to Umergaon. M.S. University of Baroda.

5. Chakrabarty, Pranati. Physiological studies on the effect of growth promoters and inhibitors anti-auxins on the extension growth of isolated leaf tissues. Gauhati University.

6. Chaube, Ragini. Evaluation of higher plants for their fungitoxicity against Helminthosporium oryzae. University of Gorakhpur.

7. Dhepe, Rajabhau Sharanappa. Physiological studies in drought resistance. Shivaji University.

8. Gopalakrishnam Raju, Pericherla Venkata Suryanarayana. Embryological investigations in Rubiaceae. Andhra University.

9. Kaliaperumal, Narayana Bakthar. Ecological studies on some red algae of the Visakhapatnam Coast. Andhra University.

10. Kapadnis, B.P. Aquatic fungi of Maharashtra. University of Poona.

11. Mekrani, Shahid. Investigations on fungi associated with diseases of some common edible fishes. University of Gorakhpur.

12. Mitra, Asim Kumar. Embryological studies in the passifloraceae and the cucurbitaceae. Nagpur University.

13. Molla, Fozlur Rahman. Structure and behaviour of chromosomes as an aid in the interpretation of phylogeny and evolution and response of chromosomes to X-ray and various polyploidizing chemicals. Visva-Bharati.

14. Patil, Jayaprakash Shivanagouda. Studies on the effect of growth substances on growth and regeneration in tissue cultures. Karnatak University.

15. Sasangan, K.C. Agaricales of South-West India with special emphasis on the genus Agaricus. University of Poona.

16. Sharma, Reeta. Studies on the effect of gibberellic acid and cyclic nucleotides on flowering of Impatiens balsamina and Eschscholtizia californica. Panjab University.

17. Sundari, K. Tripura. A contribution to the embryology of Pittosporaceae. Kakatiya University.

18. Venkatarathnam, P. Studies on an Indian strain of tobacco necrosis virus. University of Madras.

19. Verma, Karuna S. Studies on the nutritional physiology of Curvularia lunata (Walker) Boedjin causing rot of citrus fruits and the biochemical changes during pathogenesis. University of Jabalpur.

Zoology

1. Arya, Mohan Brijesh. Evaluation of certain biochemical responses of Channa punctatus (Bloch) to different concentrations of ammonia and to different temperatures. Visva-Bharati.

2. Banyal, Harjeet Singh. Hydrolytic enzymes of erythrocytic stages of rhesus monkey malaria parasite, Plasmodium knowlesi and their probable role in red cell invasion. Panjab University.

3. Bhavsar, M.C. Biochemical, histophysiological and ecological studies of edible mudskippers of Sikka Coast of Saurashtra. Saurashtra University.

4. Iyengar, Smriti. Studies on the relationship of post hatching development of brain with the duration of nestling period in altricial birds. M.S. University of Baroda.

5. Joshi, B.G. Studies on the developmental anatomy of Coccinellidae of Poona. University of Poona.

6. Kubra Bano. Some ecological studies on the millipede Jonespeltis splendidus in relation to soil humification. Bangalore University.

7. Mohana Rao, Pala Rama. Studies on the ciliates of Visakhapatnam, Andhra Pradesh. Andhra University.

8. Nanda, Balaram. Studies on taxonomy and ecology of Enchytraeidae (Oligochaeta) in tropical soils. Sambalpur University.

9. Neena Rani. Effects of some alkaloidal drugs, carcinogens and antibiotics on mitosis and meiosis in Pterotheca falconeri. Panjab University.

10. Pal, Tarun Kumar. Systematics of Silvanidae (Coleoptera : Clavicornia) from India and some neighbouring areas. North Bengal University.

11. Panicker, P.V. Ramachandra. Occurrence, distribution and removal of intestinal parasites in different sewage treatment processes. Nagpur University.

12. Ravindarpal Singh. Histological and histochemical studies on some digenetic trematodes. Panjab University.

13. Sarbjit Kaur. Cytological studies on some Indian bats. (Chiroptera). Panjab University.

14. Satyanarayana Rao, G.P. Some studies on the biology of reproduction in Clarias batrachus Linn. Karnatak University.

15. Sudan, Onkar Singh, Studies on trematode fauna of Jammu Province. University of Jammu.

16. Thippareddy, S. Studies on the biology of reproduction in the garden lizard, Calotes versicolor (David). University of Mysore.

17. Tripathi, Arun Kumar. Neuro-secretion in Odioporus longicollis Olivier (Coleoptera : Curculionidae) with special reference to the effect of chemosterilants. University of Gorakhpur.

18. Vasisht, Roop Narain. Contributions to the tertiary mammals from Haritalyangar, Himachal Pradesh, India and their evolutionary significance in the context of paleoprimatological studies. Panjab University.

19. Vijaya Kumar, N. Denervation studies of some aspect of carbohydrate and protein metabolism in the gastrocnemius muscle of Calotes versicolor (Daudin). Kakatiya University.

Medical Sciences

1. Gajalakshmi, B.S. Studies on the effects of scorpion venom on experimental animals and the efficacy of certain drugs in combating the toxic effects. University of Madras.

2. Malhotra, Anil K. Drug addiction : A psychological study. Bangalore University.

3. Pillai, Venugopal, K. Ganglionic mechanisms of some drugs, M.S. University of Baroda.

4. Sharma, Arun Kumar. Phytochemical study of minor sources of unutilized oils and fats and studies on essential oils of Pistacia integerima Stewart. University of Saugar.

Agriculture

1. Deshmukh, Rajaram Bapusaheb. Growth, analysis and inheritance of yield, yield components and morpho-physiological traits in chickpea, C. arietinum L. Mahatma Phule Krishi Vidyapeeth.

2. Jagtap, Balvant Kanderao. Studies on the leaching losses of nitrogen from medium black soil cropped with sorghum, Sorghum vulgare Pers as influenced by levels of nitrogen, organic matter and moisture regimes. Mahatma Phule Krishi Vidyapeeth.

3. Mahendra Singh. Genetic and immunochemical analysis of heterosis in green gram, Vigna radiata L. Wilczek. Haryana Agricultural Univrsity.

Animal Husbandry

1. Balu, P.A. Study of physical, osmotic and biochemical changes of blood during preservation for transfusion therapy in Bos bubalis. University of Madras.

2. Krishna Chandra. Differential adoption of dairy innovations by the farmers of Intensive Cattle Development Project, Karnal, Haryana. Panjab University.

3. Maheshwari, Sita Ram. A comparative study on energy and protein requirement of the native and cross bred lambs. Panjab University.

4. Nawab Singh. Investigations on the protein requirement for maintenance and milk production in goats. Panjab University.

ADDITIONS TO AIU LIBRARY

Association of Indian Universities, Delhi. *Universities handbook 1979.* Delhi, Author 1979. xvi, 1142 p.

Association of Principals of Non Govt. Colleges affiliated to Guru Nanak Dev University. *Financial collapse of non Govt. affiliated colleges: Causes and remedies.* Amritsar, Author, 14 p.

Bowman, Mary Jean and Anderson, C. Arnold, *Mass higher education: Some perspectives from experience in the United States.* Paris, OECD, 1974. 145 p.

Corbett, Anne. *Innovation in education : England.* Paris, OECD, 1971. 48 p.

Council of Europe, Council for Cultural Cooperation. *Some significant experiments in vocational training (Surveys conducted in 1977).* Strasbourg, Author, 1977. 150 p.

Council of Ontario Universities, Committee on Operating Grants. *Changing public priorities : Universities and the future of Ontario.* Ontario, Author, 1980. vi, 69 p.

Dalin, Per. *Innovation in education : Norway.* Paris, OECD, 1971. 69 p.

Gardner, David Pierpont and Zelan, Joseph. *Strategy for change in higher education : The extended university of the University of California.* Paris, OECD, 1974. 95 p.

Gronbjerg, Kirsten and others. *Poverty and social change.* Chicago, University of Chicago Press (C 1978) 248 p.

Grubel, Herbert G. and Scott, Anthony. *Brain drain : Determinants, measurement and welfare effects.* Waterloo, Wilfrid Laurier University Press, 1977. xiii, 165p.

India, Ministry of Education and Social Welfare. *Expenditure on education as shown in central and state annual budgets 1974-75 to 1976-77.* Delhi, Author, 1976. iv, 165p.

Institution of Engineers (India). *Role and problems of professional institutions in a developing economy : Seminar, Delhi, 1969.* Delhi, Author, xxix, 148p.

Intergovernmental Conference on Environmental Education, Tbilisi (USSR) 1977. *Education and the challenge of environmental problems.* Paris, Unesco, 1977. iv, 57p.

——————. *International programme in environmental education (Unesco-UNEP).* Paris, Unesco, 1977. 20p.

——————. *Needs and priorities in environmental education : An international survey.* Paris, Unesco, 1977.

Jones, A. *Multimedia computer assisted and computer-managed instruction.* Paris, OECD, 1971. 99p.

Malik, Vimla. *Psychological freedom in education.* Delhi, Kalyani Publishers, 1979. viii, 207p.

Margolis, Alan M. *Nigeria : A study of the educational system of Nigeria and a guide to the academic placement of students in educational institutions of the United States.* Washington, American Association of Collegiate Registrars and Admissions Officers, 1977. x, 117p.

National Council of Educational Research and Training, Delhi. *Teacher education curriculum : A framework.* Delhi, Author, 1978. iv, 65p.

Ontario, Commission on Post-Secondary Education in Ontario. *Draft report.* Toronto, Queen's Printer, 1972. 112p.

Ontario Institute for Studies in Education *Adult Education through university extension : Selected research abstracts.* Ontario, Author, 1968. vi, 83p.

Paris, OECD. *Framework for educational indicators to guide government decisions.* Paris, Author, 1973. ii, 17p.

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Editor : ANJNI KUMAR

Management of Research in Universities

G. Ram Reddy*

The purpose of research is to undertake systematic enquiry into a subject in order to discover or revise facts and theories. While research output in most organisations in India has been on the increase during the last 30 years there has been dissatisfaction with the type of work done. Prof. Nirmal Kumar Bose observes that in much of the research work which is carried out in our universities today the spirit of adventure and the desire to tread in paths which are untrodden seem to be lacking. At a Conference of Physics education and research, one of the Professors made the following remark : "A cursary look at these achievements will immediately suggest that India's performance in the field of Physics has been extremely poor. Even in the field of theoretical physics it has been far from satisfactory. The experimental work has been of mediocre character. In the field of technique it is very near zero". This is a rather harsh and over simplified judgment of physics. However, it is indicative of general feeling about research in our universities. Hence the dissatisfaction. The dissatisfaction can be of varied type and could be the result of diverse factors associated with research. In this paper it is proposed to examine why, in spite of the fact that millions of rupees are being poured into research, its performance is not considered to be satisfactory? I am conscious of the fact that there can be no objective criteria for measuring "dissatisfaction", "satisfaction" or "performance". Here, it is only proposed to highlight the nature and cause of dissatisfaction.

Research in India is carried on in a large number of institutions: (1) establishments working as part of the older academic institutions such as the universities; (2) autonomous or semi-autonomous organisations like the national laboratories; (3) government departments set up specifically for research, for example, various defence research establishments; and (4) laboratories or research bureaus maintained by private sector.

Though management of research poses problems in all these institutions, in this paper we are concerned mainly with the management of research in the universities.

The two academic responsibilities of teachers in the universities are teaching the students and contributing to knowledge through research. While the importance of teaching is well acknowledged, the role of research is still a controversial one. Yet another controversy is over the proper balance between teaching and research in the universities. It is generally felt that those who concentrate on research neglect teaching and they devote more time to research because it is prestigeous and rewarding. Good teaching which is the primary duty of a university teacher, it is felt, is not properly rewarded. Thus, one finds that balance between the two is not a struck in most of the universities in the country and the debate continues.

Though higher education is imparted in colleges and university departments, the general feeling is that research is a thing to be done only in university departments and colleges are meant only for teaching. V.V. John quotes an American educator who draws the distinction between the educational mission of the college and that of the university. He said, "a college teaches; a university teaches and learns". John goes further and says "in India we would seem to be accepting a different sort of distinction: "a college teaches; a university learns". This approach is certainly not the appropriate one,

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Vice Chancellor, Osmania University, Hyderabad.

for a college should not only teach but also learn; at the same time a university should not only learn but also teach. But in recent years the tendency in universities is for senior teachers to give up teaching exclusively to research. This has tilted the balance in the universities in favour of research.

It may be mentioned here that until 1947 most Indian universities were primarily teaching institutions and, barring a few exceptions, research did not flourish in these institutes. It is with the advent of independence that research received tremendous support and attention. Here again the research traditions in the physical sciences were much older than in social sciences. After independence with the creation of several funding agencies like the U.G.C., the C.S.I.R., the I.C.M.R., the I.C.S.S.R. and the I.C.A.R. money became available for research to the teachers in the Indian universities. The climate in the universities also started changing with regard to career prospects of the university teachers—promotions got linked up with research output of teachers. As a result, during the last two decades, lot of attention has been paid to research in the universities. Today most university departments have several research projects and individuals also devote enough attention to this aspect of their work.

There are two types of researches carried out in the university—team research where the researcher is a member of a group of teachers working on a common problem and individual research where the person works on his own. Group research is very common in physical sciences. Even in social sciences research projects are the efforts of a number of individuals under the leadership of one or two persons.

Working for a Ph.D. or a teacher doing work on his own are good examples of individual research.

A few years ago, a western scholar addressing research scholars in an Indian university stressed the importance of acquiring a Ph.D. degree by saying that, "Ph.D. is like a pair of pants; if you wear it nobody notices but if you do not, everybody looks at you". That Ph.D. is a beginning of one's research career and not the end is well known. A postgraduate student who is interested in a teaching career would like to start his research by enrolling himself as a Ph.D. scholar. To get into the university teaching service, Ph.D. has become an essential qualification. Therefore, Ph.D. has a tremendous career value. Those who are already in service are also going in for Ph.D. because their promotions are linked with this degree. But Ph.D. is essentially an individual research enterprise under the guidance of a senior scholar. In every university today one finds hundreds of scholars registered for Ph.D. Some of them give up in the middle and some continue till the end. A few issues relating to doctoral research deserve to be noted here.

In most Indian universities the fresh master's degree holders has no idea of the subject on which he wants to work for his Ph.D., here he is very much guided by the scholar under whom he would like to work. It is the supervisor who suggests a number of topics from which the student could choose. After selecting the topic he appears before the research committee where he is questioned about his interest and importance of the subject. Once the committee accepts him, he is admitted and he proceeds with his work under the supervision of supervisor. Some of these Ph.D. scholars are lucky to receive scholarships from some funding agencies; others work on their own. Generally, the full time Ph.D. scholar takes about three to four years to complete his thesis. Difficult problems arise in the case of part-time research scholars who are mostly working as teachers either in universities or in colleges. With the fairly heavy teaching load such scholars are unable to complete their work in reasonable time and they tend to take unusually long time to complete their work.

There are a number of problems associated with the management of research in the universities. The nature of these problems varies from the type of research undertaken by the teachers. Take the case of research projects where one senior scholar submits a proposal to a funding agency and would like to investigate a problem in collaboration with several investigators. This is the most common type of research undertaken in the universities. Several problems are encountered in this kind of research enterprise. Every research proposal has to be forwarded to the funding agency through the various university authorities. It starts with the head of the department, goes through the principal/dean to the university which finally forwards it to the agency concerned. In the forwarding of a proposal itself a scholar might encounter one of the two types of difficulties. In some cases the higher ups who are not favourably disposed towards the scholar might negative such proposals or there can be enormous delay in forwarding a proposal because it has to go through various channels in the university system. Generally most proposals are forwarded to the funding agencies. Thereafter the funding agency takes its own time to consider a research proposal for it has to send to experts for evaluating the proposal and place the proposal before their appropritae committees. If the proposal is sound, the funding agency approves it and thereafter letter of approval is sent to the university concerned and to the individual who has sent the proposal. This is only the first stage of research.

After getting the sanction, the individual would like to start his work on the project as early as possible because most projects are time bound, say one or two years but in several universities the project directors face number of difficulties in implementing the projects. Though the project director is the head of the project he has not got the freedom to move fast in executing it. He has to go round the university office to get the money released. This is a herculien task and in some universities it takes months. Thereafter he has to take the permission of the university authorities to recruit staff required for the project. This again is a time consuming process. After getting the approval he has to follow the procedures relating to recruitment of staff and it has to be done according to the qualifications prescribed. In several universities it can be a pretty time consuming process; in a few universities some of these things have been decentralised and the project director enjoys enough autonomy.

Once these preliminaries are over the project director has to prepare the blueprint for the actual work whether it is field work or laboratory work. Most social science researches involve field work for which properly trained and qualified staff has to be recruited. It is the experience of several project directors that it is extremely difficult to get properly trained staff. Very often fresh graduates or post-graduates are recruited and they take lot of time not only to understand the subject but also mechanics of research. Even after that there is no guarantee that such staff would continue till the completion of the project for several of them join research projects only as a stop-gap arrangement and they are always on the look out for more secure positions. Thus there is a lot of wastage in manpower in research projects—the turn over of staff is very high. Lucky is a project director whose investigators continue in his project till it is completed. Here one finds that there is no regular policy in the universities to retain the trained research workers. Every project director is most of the time struggling with raw-graduates.

Organising and supervising field work could be a very difficult task. Making arrangements for the visits of investigators to rural areas is no easy task. Conditions being what they are in rural India the researchers have to face many problems in villages such as accommodation, transport and food. What is even more important is that people in the rural areas suspect the investigators as agents of government. It really takes a lot of time to establish rapport and collect proper data. Those of the research directors who have full teaching responsibilities are not in a position to supervise the work of the investigators in the field. As a result, several of them tend to carry on research activities only during the vacation. No wonder few university projects get completed in the prescribed time schedule.

Another important aspect of management of research which deserves attention is the time and attention paid to research. Is it possible for a university teacher with his full teaching responsibilities to pay adequate attention to his research project? It is the experience of the most scholars that they are not able to do justice to both teaching and research—one of the two tends to get neglected. Therefore, it is worth considering whether such teachers should be given substantial relief from teaching while they are engaged on an important project. Very few universities can afford to do this because of the financial constraints. One way of tackling this problem would be to give the teacher complete relief from teaching but he should draw his salary from the project itself while he is devoting his full time to it. It is observed that in most research projects the directors are honorary. The change in the policy, therefore, would go a long way in strengthening research activity in universities.

A phenomenon which is commonly observed is that most research projects go to senior scholars. It is partly because of their reputation in the profession and partly because of their contacts; the younger staff members rarely get opportunities to have independent projects on their own. Thus, one finds that only those who are well established in the profession get funds from outside agencies. There are a number of government agencies which provide funds for research but they tend to back up only the "known horses". No wonder there is a feeling that only good "operators" can get funds for research and the talented young men are not rewarded. There is some truth in the allegations that, as in the case of public works department where contracts cornered off by established contractors, so in research, projects are monopolised by the seniors in the profession.

Research cannot thrive unless there is proper climate in the universities. The departments where proper climate has been created, they have been humming with research activity. Where such a climate is absent individuals in the departments do not feel encouraged. The hierarchical set up of departments has an adverse effect on such an atmosphere. In our set up much depends on the whims and fancies of heads of departments. There are cases where the heads do not evince any interest in research. There are those who would like to monopolise every research opportunity. Where the heads are interested in research, they tend to promote their own areas of specialisation to the neglect of other branches of the discipline. Only where the heads have broad outlook and believe in involving all colleagues, the atmosphere of research has been built on right lines. "Under the prevailing conditions in India" writes A. Rahman, "the departments act as centres of vested interest, both from the point of view of administration and research. They are hierarchical in organisation, with concentration of power in the head of the department, and act as a brake on developing newer areas of research". Democratisation of departmental set up alone can bring about change in atmosphere.

One of the reasons why research has been receiving lot of attention in the universities is the stress on "publish or perish". Since a man is judged by the number of publications and his career depends on such a number, there is a tendency to boost up the numbers. But in the name of publications lot of spurious stuff is labelled as research.

While there is lot of research activity in several university departments it is mostly of an adhoc and not of a continuing nature; it is dependent on the availability of funds. There are very few universities which make funds available to departments on a recurring basis. All the time the researchers have to apply to outside agencies and only when they approve their research proposals is it possible for them to do research. Though several agencies like the U.G.C., the C.S.I.R., the I.C.S.S.R. provide funds liberally, there is no continuity in these things. As a result the departments are not in a position to have long range policies relating to their research.

When a project is over, the work concerning that project abruptly ends. The manpower trained in the project also goes waste. There are exceptions to this where a few departments have been recognised as centres for advanced studies or special assistance programmes have been given by the U.G.C. In some other cases special centres of research have been established. In such instances there is continuity in research and the departments can have long range research programmes. If research is to be put on a permanent footing some funds have to be made available to those departments which are active in research. These large amounts cannot be provided by the universities but they could set apart some money for research in these departments. Big projects, however, have to be financed only by outside agencies—some on a long term and others on short term basis.

It is a welcome feature that a number of institutions like government departments, the U.G.C. and other agencies are providing funds for research in universities. As has been pointed out earlier, this has given tremendous boost to research activities in university departments. It may, however, be added here that the money coming from outside is not always as unmixed blessing. If it is coming from autonomous agencies like the U.G.C. and the I.C.S.S.R., the C.S.I.R. etc., generally it is free and does not carry any restrictions—seen or unseen. But we are not sure whether the same can be said of research financed by foundations and government departments. Both these organisations would like to spend money on subjects of their choice which are handled by non-controversial people. Long ago Professor Herald J. Laski pointed this out when he said " 'dangerous problems' are not likely to be investigated, especially not by 'dangerous men'; that would not win the esteem of the trustees who can be counted upon to dislike disturbing themes . .. it must be remembered that the system, as it works, is all to the disadvantage of the scholar whose results however important, come slowly". It is understandable that government departments and foundations have their own research programmes and would like to promote them according to their own priorities. Only those scholars who are interested in such problems would have any chance of getting money from them. This is not an altogether unhealthy feature. But the two implications of research sponsored by such institutions tend to affect academic freedom. If the results of a research done are unpalatable to the institutions it is not certain whether they would be welcomed, in all probability the report would not see the light of the day. Secondly, these researches are time bound; there is a problem to be investigated and the results must be given to the funding agency according to the time schedule. This some times affects the quality of research.

The utilisation of research has been causing concern to all those interested in it. The findings of research, particularly action oriented research, do not generally have any effect on policy. This is noticed clearly in social science research where public policies do not take into account the research findings. There is hardly any rapport between the researcher and the policy-maker; each seem to live in his own world. When the nation is spending millions of rupees on research, it is argued, its fruits have not been taken into account in the formulation of public policies. The first Review Committee of the I.C.S.S.R. summed up the feelings very well when it said: "Social Scientists are frustrated by the fact that the research they produce is not utilised by the requisitioning agency or by the authorities in general. The concept of 'two cultures', as perceived by C.P. Snow, applies fully to the utilisation of social science research. The linkage between the enterprise of the discovery of knowledge and the enterprise of matching scientific research with the technology of practice leading to utilisation does not operate in the areas of social science with any great force in this country. As a consequence, the rigour and the purpose of social science research suffer as much as the relevance and effectiveness of policy formulation and implementation". It is true that there are dangers in having close collaborations but total isolation of social science research and policy making is also not a desirable feature. As the Review Committee of the I.C.S.S.R. says: "There is need for action on the part of social scientists not only as individuals but as a community and the users of research as well to bridge the gap between the enterprise of knowledge generation and the enterprise of knowledge utilisation". The administrators and political leaders, says the Committee, will need to take sustained initiation in allowing social science research to influence policy formulate and execution.

This is also true of physical sciences when there is a lot of gap between a discovery and its application which is mainly because there is no proper coordination between the institutions of research and those involved in application. Wherever applied research is going on there is a strong case for effective coordination among producers of research and consumers. As V.V. John writes it is necessary that our education tries "to bridge the time between discovering truth and placing it at the service of men".

One serious criticism against the research carried on in the universities has been that it is not relevant to the problems faced by the society. There are those who argue that ours being a poor country we really cannot afford the luxury of fundamental research; we should be more interested in investigating problems of immediate relevance. Others who are opposed to this argue that the universities are not factories, they should concentrate on fundamental problems. Either of these approaches is not valid. University departments have to conduct both the types of researches—fundamental as well as applied. If problem solving research is not undertaken in the universities they would be subjected to tremendous criticism and would be dubbed as ivory towers. What needs to be stressed here is that too much of liberal education approach is no longer valid. University teaching as well as research would be judged in future by their relevance to the community. It was this reaction which led to the establish-

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Research in and into General Practice

N.N. Laha*

The terms used for the present discussion are comprehensive ones. General practice combines medical practice in a general way. A few years back this was the mainstay of clinical practice. With the coming years, consultancy practice has assumed an important position. Also, specialist practice is fast coming up. So much so that it has overtaken general practice to some extent. But general practice shall perhaps always be the more popular type because of its general attitude.

Research is the search for truth. Science is truth. Medical research paves its way for a better understanding of the disease problems of suffering mankind. A disease conquered should be no cause for rejoicing. A disease conquered paves way for a newer one to solve. Therefore, it is a relentless struggle which perhaps will never end.

Research in and into general practice shall always remain an interesting topic. This is because it has a wider scope of carrying it out. From a practical point of view, research and its correlation with general practice goes a long way.

Clinical perfection has unfortunately not very much caught up with the present day imagination. There was a time when clinicians would take pride in their clinical sense. But unfortunately now the trend is towards a 'quick treatment' rather than a 'correct diagnosis'. There is no doubt that medical science has advanced itself in strides over the years. Mortality has reduced and now man lives longer that what his fathers used to. But the tragedy remains. This is that, then medicine was a combination of art and science. Now this is no more. It is merely a tool to treat. Brilliant investigatory techniques and wide range of drugs have to share the blame to some extent. 'Why the clinical perfection?' is perhaps the thinking of a general practitioner, when nobody perhaps will question even when he makes a mistake. That lessens the zeal to probe a problem. It seems that perhaps nobody has even time to probe. Unfortunately or fortunately, the problem of the patient gets solved even though it has not been properly probed into. A large number of drugs helps in developing this trend. One can imagine the past masters of clinical science watching worried from above to see this state of affairs. Hippocrates lived years ago. His sayings still hold true today. He was called the Father of Medicine. His observations were a great factor in his success. But who observes today? Clinical research could mean observation. And perhaps this can be best done by a general practitioner.

Thinking and constant thinking is perhaps a very important tool in general practice. How large the number of patients may be, thinking into their problems should be the research of a clinician? Theory itself is good, it forms the base of a clinician, but perfection in developing the clinical sense comes from thinking. A simple diagnosis of hypertension may have many branches coming out in the way of etiology. That is research. A general practitioner should probe into the welfare of his patient. General practice cannot be converted into a business. Even if it has to be converted into business, then also it should be a very puritan and sacred business.

History of medicine gives examples of brilliant research work coming out of pure thinking or observation. The discovery of stethoscope was a chance thinking of Rene Theophile Hyacinthe Laennec. Had he not bothered to think as to how he would hear the heart sounds of a fat lady patient, the stethoscope would perhaps never have been discovered. Today the stethoscope is a must for a doctor. William Withering introduced digoxin. Had he not bothered to find out as to why a particular lady patient was not improving when she was not supposed to have improved (she was eating a decoction which had foxglove), would never have brought forth digoxin. Today it is an important drug. There are so many examples. After all, research in many ways is an inspiration. One may strive for years and achieve nothing. Another may just loiter about and a flash comes to give a great research.

Louis Pasteur had very correctly said, "In the field of observation chance only favours the mind that is prepared."

Record keeping is a very essential part of research. Useful information can be derived from well kept records. A general practitioner can keep a wonderful record of cases seen by him—as such he sees a very large number of cases. Suppose data about a particular disease is needed. If the general practitioner does not rise to the occasion, it would be a matter of shame. The general practitioner should have some idea about statistics also so that it could be applied whenever needed. Mass planning programmes can be planned out on record keeping maintained by doctors.

The present standards of medical research have come a long way now. General practice sadly lacks the technical side of the question. Diagnosis of a disease is mainly based on so called 'clinical sense' and treatment on 'therapeutic sense'. As regards research institutes, there are quite a few but reference there by the general practitioner is made very rarely.

The present position may be bad but there is no cause for getting panicky. It has already been pointed out that the best of research work has some time been done by a general practitioner. A general practitioner should realise as to what type of

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research is important for society. Clinical research is perhaps the answer. And he should form the base for this type of research. There are reasons for this. A general practitioner perhaps sees the biggest series of patients among doctors. All sorts of patients flock to him. He should ideally be called ‘specialist among specialists’. He is a physician, surgeon, ophthalmologist, orthopaedician, gynaecologist, all rolled into one. Therefore his experience is much more than a consultant who specialises in the branch of a particular subject. Medical research should unite problems to be rolled into one solution. The unity of problems with a common solution should not be a pipe dream. When a problem becomes different to solve then help of the consultant should be taken.

Every patient cannot be put in a hospital. Domiciliary management will always remain the answer. A general practitioner fits in beautifully into the system. Therein research can become so easy for him. It will help his patient also. Directly under his supervision the doctor can manage and research on a case. Modern research is a full time establishment. Still the past bore brilliant research without such establishments. Even in the present set up, a general practitioner can boost standards of research by his cases and the information about disease given by them. Insulin may have been a brilliant achievement of Banting and Best, but the experiment was first done of it on a human being in the form of a diabetic boy dying in the neighbourhood. The boy survived and so did research succeed.

Trials are a part of research. A drug trial need not necessarily be the responsibility of one consultant. It can be done by general practitioners also Confidence comes up when one makes himself feel responsible. A general practitioner is a great help in this line. Therein his help in research is there. In fact drugs are perhaps more used by the general practitioner than anybody else. He should be the better and impartial judge of the drug.

A general practitioner can always form the base of research workers. The research worker can depend upon the general practitioner to send him ideal cases for research. This of course means higher types of research which cannot be carried out at the general practitioner level. The general practitioner should always be willing to refer cases for their welfare. That should be the trend. The general practitioner should be a screening computer for higher things to come. This clockwise regularity relationship should be there between the general practitioner and research worker or say an institute, and this would solve many unsolved problems of disease.

So research in and into general practice can be done. It should ideally be the base of research. The general practitioner should himself be a clinical researcher and leave the complicated problems for the man meant for this. A general practitioner should see, think and probe problems about the patient. He should maintain good records of his cases and also know statistics. He should be actively engaged in drug research. He should think for the betterment of his patient and give him hope. The man meant for higher research depends on him for better things to come i.e. improvement in medical research.

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Management of Research in Universities

(*Continued from page 536*)

ment of Land Grant Colleges in the United States.

As a direct result of publish or perish tendency and higher prestige attached to research, quantity of research has grown enormously in physical and social sciences. Quite a few persons today take up research not because they have an aptitude for it but because it has prestige value and career prospects. There is a tendency to add to the number of publications, for the output of quantity is considered to be important. As a result says, Blau, ludicrous practice may develop; for example, the names of all members of research team may appear on every publication though only one or two worked on each. To raise the publication records of all the same research findings, with minor modifications, may be published in two or more journals. What is of greater significance, the pressure to publish diverts attention from more important research problems to those promising to yield quick results. The consequence is that scholarship suffers, and many articles in learned journals "resemble finger exercise on the piano....(and have little concern) with answering real questions or solve important problems". Energies, therefore, go into pedestrian type of research work. As Professor Frank Dobie once said: "the average research job they engage themselves in is of nothing but the transference of bones from one grave yard into another". The main problem, therefore, is ensuring quality of research.

To sum up, it has to be realised that research is an important function of university. If research is to prosper in the universities facilities have to be provided so that it can be done on a continuing basis. The relevance of research to the community has to be borne in mind. There has to be proper coordination between the producers and users of knowledge. More stress has to be laid on the quality of research. These are the challenges which face management of research in Indian universities. But the tendency to over emphasise research and neglect good teaching has to be checked. In the college or university, research and teaching are indeed two ends of the same bow; neither has much force without the other.

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Higher Education
—Quality & Qualification

V.N. Misra*

With the introduction of large scale Ph.D. programme by the U.G.C. in various disciplines of higher learning, the University community started thinking about its implementation and real worth. Prescribing Ph.D. as an essential qualification for teaching at University has come to the new non-Ph.D. entrants as a great barrier to their career development and academic achievement. Within a period of 5 years of their initial appointment they have to earn a Ph.D. along with their daily teaching work. (Teacher fellowships are still limited in number).

Aims of a higher degree

What is basically deemed of a Ph.D. programme at the level of higher education? How far the Ph.D. programme adds to the merits of quality teaching? Whether it adds to the personal development of the researcher only or it has any relevance in the wider context of nation and human society as a whole? Do there exist adequate facilities for carrying on research in our universities? These are a few models of questions being generally discussed in the University fraternity. Thinking generally on the pattern of higher education and its quality-improvement the teachers have realized the basic necessity of improving the standard of teaching and learning. The faculty improvement programmes and the degree oriented research work have been the basic concern of teachers at the highest level.

Before coming directly to the questions as posed above, let us analyse the circumstances out of which they have taken their birth. The falling standards of education, non-relevancy of the content of syllabi, lack of definite social aims, fruitless intellectual endeavours, burdensome and boring systems of instruction and above all the absence of personal human touch have all added to defect the very purpose of human welfare in person and in society. No educational system can prosper in the isolated island. Hence it is not far to seek why our educational planners have shown their anxiety and worry over the present situation.

Any prescription or restriction is but aimed at energising the ailing system of our education. But can you bring energy in a sick body without first removing its original disease? Even a major operation would be indispensible to achieve the ultimate goal of sound health. The poor medicines may fail and make even the most sincere effort futile. Hence what our ways and means should be for the realization of our purpose, has been the great concern of those who are responsible for showing the torch-light in the vast dark field of educational unrest.

As a general rule, a higher degree symbolizes a higher standard of learning. The various specializations in different fields of learning are generally falling within the scope of a Ph.D. programme. A sound background of general education is regarded but a preliminary for specialization. On the whole, the general education ranks little lower in status in our present set up. Specialists in particular disciplines are automatically ranking higher in their positions. Hence it is obvious that a system which promotes the cause of specialist education, is aimed at furthering higher education in special branches of academic pursuit. But is it all that a sound educational system should be? Where does the cause of promoting the sound general education stand? The tooth and nails of a higher degree, which in our system symbolizes a better standard of academic achievement, have always been telling upon the health of general education. Can we produce good generalists in the present system of education, is a great issue with regard to our programmes pertaining to higher learning? Here we meet nothing but an unavoidable disappointment.

The present Ph.D. programmes aim at sharpening the human intellect in a particular area of learning and thereby are supposed to advance knowledge in that specific field only. The specialists may be in great demand but the question is whether we can discard the need of good generalists in our society. The quality of teaching in a particular area may be regarded to have been improved by ensuring a higher research programme of learning in that area. But what about the general field? The specialists may fail badly in the general field of learning due to their limited special type of academic achievement. It can, at least, be well understood that the contribution of a specialist will not add much to the quality improvement programme in the field of general education. The combined efforts of various specialists will always lack the presence of a unified personality of a living teacher. It can be only a comprehensive understanding of the general area which is likely to add some quality in general programmes of teaching. It may be a Ph.D. programme of general type or a differently named programme of comprehensive nature which can deliver some good results in the general education of a developing country like ours.

Position of guides in higher research

Facilities for research in specific disciplines have been provided in various centres of higher learning. Keeping in view the large number of researchers, they fall short of their adequacy. A large number of research workers under the guidance of a few so-called experts and guides being very small in number is another drawback in the field of higher research. According to the prevalent norms in the field of higher education in our country the qualified persons, who have a capacity to guide research, are denied the position of guide, under one excuse or the other. Seniority, teaching experience, being in good books of head and other

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**Shivaji College, New Delhi.*

authorities are said to be a few criteria which can provide one with the opportunity of being a guide even in the area of study where the guide himself might be a new entrant. Command over the area of study, fundamental capacity and aptitude for indulging in serious research work have been ignored in a large number of cases. Interest of guide in the work of a research student is again a subject of serious objections. The traditional concept of some achievement by the research worker only has marred the basic interest of a guide in the research project. The guide on the other hand, should also be adequately awarded by the fruits of a successful research in his area of study. Most of our established research centres have been ignoring the poor position of senior guides. The high educational authorities like U.G.C. have also not yet taken botheration to provide any extra facility to a research guide. The guides, on the other hand, in the absence of any authorized payment for their labour have been trying to compensate in some way or the other and thus weakening their own mind and soul.

How long should it continue in the interest of higher research? The research grants should aim at research as a whole i.e. the guide and the researcher. Environmental and material control should be regarded well within the scope of a particular research project and the guide should be given a free hand to control them. Keeping in view the strict quality control, the supervisory bodies like U.G.C., N.C.E.R.T. etc. should fix general norms and standards which need not be allowed to be borrowed on any ground. The total pursuit of research should be weighed in terms of expenditure and the results expected to be delivered to the nation and human society as a whole. Non-practicability, meaninglessness, irrelevancy, low standard and immitation should all come to create a valid suspicion in the final assessment of a research project.

Higher education and class-room communication

The impact of our research oriented programmes on general quality of teaching should be studied in detail. The discipline applied in the course of achieving goals of learning differs from the one used in class-room communication of the same. The former is devotion oriented and the latter technique oriented. We have been ignoring the second type of discipline in the field of higher education since long. This has practically created a communication gap between the teacher and the taught. Being master in one area of study is not the same as being a master in communicating the subject-matter of learning. The teaching in our universities is more lecture oriented. It suffers from a great drawback in the art of communication. Tape records, films, charts and written devices on the subject-matter (not in the form of printed general books only) and such other aids have yet to play their creative role in the field of higher education. As a matter of fact we have been talking a lot about the application of teaching aids and devices at secondary and primary stages of education. But we have not yet succeeded in this field. Theoretical degrees with a handful of so-called model lessons could deliver no good even at the secondary and lower secondary levels of education. Higher education which seeks to achieve higher values should not ignore the way through which it can more successfully communicate to those who are going to immediately apply their earned knowledge in their own lives and in the wider context of nation and the society as a whole.

Preference for saleable values

The higher values in human life may be divided in three categories i.e. the established values of the past, the present saleable values and the future guiding values. The function of higher education should be to keep a proper balance and check over these values. Unfortunately with the rise of industrial market in the world the educational planners have shown their preference to the saleable values. Is it all that the wise educational planners in the field of higher education should do? The present saleability may be in demand upto any extent but without a foresight for the coming ages the higher education will remain blind. The absence of past established values will make the higher education lame.

Responsibility of intellectuals

Who can maintain the proper check and balance in the field of higher education today—the individual, the Government, some sections of society or any other social agency? The control of big industrial houses over higher education is not far to seek. They have frankly suggested a vocational bent of mind. In the name of social justice and social good various sections of society have tried to see their ulterior aims achieved. An open threat to the autonomous character of educational institutions is telling its own story. It has endeavoured to give a specific mould to the entire system of higher education. Thus the various agencies, mentioned above have been tried till now. The basic responsibility in the present situation lies on the shoulders of enlightened intellectuals. They can fearlessly and devotedly keep the system appropriately balanced. Strict quality control and a less degree-oriented character in an absolute autonomous environment may innovate our system of higher education. Boosting up formal qualifications cannot be expected to deliver any good to the quality improvement programme at any stage of education. □

CAMPUS NEWS

Raj proposes drastic changes in Varsities Act

The three-man Review Commission, headed by Dr K.N. Raj, which went into the working of the universities in Karnataka, has recommended drastic changes to the existing Universities Act. In its report submitted to the Government, the commission said though the passing of the Act was a step in the right direction in so far as it introduced a common system of governance and administration in all the universities, several sections of the Act had been detrimental to the effective functioning of the universities. The commission felt that over-centralisation of administration and interference from outside could not improve matters in the universities and only by reversing the changes made in this direction and permitting greater scope for academic management from within that a process of regeneration of universities could be initiated. At the same time, the commission recognised the need for social control over education. It submitted to the Government draft amendments to the existing Karnataka Universities Act, 1976, incorporating its recommendations.

The commission was appointed by the State Governor in his capacity as Chancellor of Mysore, Bangalore and Karnatak Universities (Dharwar) in January 1979. Other members of the commission are Mr D. Jaganatha Reddy, Director and Pathologist from Madras and Dr C.N.R. Rao, Chairman, Solid State and Structural Chemistry Unit, Indian Institute of Science Bangalore.

It has strongly recommended abolition of capitation fees in all colleges, professional or otherwise, within the next five years.

Professional colleges offering courses in engineering and medicine should be permitted to raise their annual fees to the extent of four to six times the prescribed standard fees, the number of seats which the management is permitted to allot should not be allowed to exceed 20 per cent of the admissions in 1980-81, 15 per cent in 1982-83, 10 per cent in 1983-84 and five per cent in the following year. Thereafter the management should not be allowed to allot any seat. It has recommended the setting up of a State Commission for higher education immediately for taking an overall view of the development requirements of the State in this sphere. Through the proposed commission, the State Government could make available, on a systematic basis, the funds for the purpose. It should be an autonomous body, consisting of not more than five members (each with specialised knowledge and experience in one or other of the major areas of higher education) and with a distinguished scholar from among them as chairman. A major function of the commission should be to frame programmes for the development of higher education in the State, preferably with a 10-year perspective, and in the process co-ordinate them with a similar perspective by all the universities in the State.

The proposed commission may constitute expert panels to review the status of teaching and research in different subjects. The commission should be able to act as an inter-face between the Government and the universities.

It should be the commission's responsibility to assess the maintenance requirements for acquisition of books, journals and administer the funds for the purpose. It need not be entrusted with the task of administering the normal grants-in-aid given by the Government to the colleges. But individual colleges affiliated to the universities should be able to approach it for assistance for specific development purposes. It recommended that all private colleges should be required by statute to reconstitute their boards of management as part of the condition of affiliation.

A State Inter-University Board should be formed to promote coordination between universities for migration from one university to other and interaction between them. It suggested the setting up of departmental councils in each department in the university consisting of all lecturers, readers and professors. In place of the existing practice of appointing the heads of departments, the task of management and administration in each department, should be entrusted to a committee of management. The committee should function in close association with joint consultative committees of students and teachers. The departmental councils and committees of management should be vested with sufficient powers and responsibilities to provide a focal point for the common professional interest. Similarly, every college should be required to constitute a staff council with wide-ranging functions.

On appointments, the commission said only if experts were unanimous in their recommendations, the syndicate should under no circumstances modify or hold in abeyance the acceptance of the recommendations.

It called for exploring the needs to establish centres of advanced study in selected areas in the natural, social science and other subjects. On engineering education, it said unplanned proliferation in the number of engineering colleges had affected the quality of education. It recommended immediate stopping of unplanned growth of engineering colleges. It would be desirable to adopt modular form in engineering education at the undergraduate level with enough scope to teach courses of relevance in the physical and life sciences and social sciences as well. Steps should be taken to promote the active participation of industries and other areas of engineering activity in the curriculum and efforts should be made to involve institutions active in social and economic studies for evolving courses on need-based engineering aspects.

It recommended that orientation programmes should be arranged in each college at the beginning of the academic year furnishing information on all available facilities. Each fresh entrant should be assigned to an academic adviser for guidance and help. Each college with the strength of 1,000 students should have a health centre. Group health insurance schemes covering all students and teachers in a college should be initiated. Students should also have a voice in the formulation of curricular programmes in decision covering methods of teaching and evaluation of students and other matters concerning them. This could be achieved by giving them representation in the proposed departmental councils and in joint consultative committees at the university level.

Demand for Urdu university

The All-India Urdu Educational Seminar held in Hyderabad adopted a resolution requesting the State and Central universities to declare Urdu as a second official language in such States where sizeable number of population speak Urdu. The one-day seminar urged the Central Government to establish at least two Urdu Universities, one at Hyderabad and another in the North. It also urged that to ensure Urdu its rightful place and to get its practical and utilisation position, reservation and proportional representation in jobs and professions. Should be provided for Urdu speaking people. Amongst other recommendations the seminar made included introduction of Urdu medium at postgraduate and research levels, establishment of separate Urdu cell at the University Grants Commission, coordination of Urdu education at State and national level, introduction of Urdu as the medium of examination for all the States and all India competitive examinations and create facilities for departmental and competitive tests in Urdu also in the autonomous bodies and corporations. The seminar recommended that the Central and State Governments should start parallel institutions for vocational and technical education in Urdu medium. It also urged upon the Union Government to give appropriate representation for educational broadcasts in Urdu over All-India Radio in the States and at the Centre. Prof. G. Ram Reddy, Vice-Chancellor of Osmania University while addressing the seminar said that the number of colleges in the twin cities rose from a mere six in 1956 to forty-five colleges at present which is a tremendous growth of education in this part of the country. India has made rapid strides only in the educational sphere. Stating that the teacher was the key for the improvement of the quality of education, the Vice Chancellor stressed the need to recruit right type of teachers. There should not be any compromise in the recruitment of right type of teachers since it was they who could improve the quality of education.

History of medicine to be included in medical curriculum

Dr. B.N. Sinha, President of the Medical Council of India said in Patna that the scope of medical education had been widened with the inclusion of a new subject—the History of Medicine—in the five-year integrated course. Inaugurating the conference of Surgeons Association of India, Dr. Sinha said that the new subject had been approved by the Medical Council of India and would be introduced in all medical colleges soon. The new subject would unfold a store house of vast valuable information paying the way for the opening of a new horizon in the country's medical care. He called for sincere efforts on the part of persons in the medical profession to know more about Ayurvedic, Homoespathic and Unani systems which would equip them better for the service of humanity. Stressing the importance of rural and community services, Dr. Sinha said that these had become an inseparable part of the medical profession. Even small efforts by the doctors engaged in the implementation of these services would go a long way in alleviating the sufferings of the rural masses. Dr. Sinha urged the doctors to carry on integrated research unmindful of the handicaps that they might face.

NEHU refreshers course for high school teachers

The Centre for Adult and Continuing Education, NEHU, in collaboration with the Central Institute of English and Foreign Languages (CIEFL), Shillong is organising "Weekend Refreshers Course in Modern Techniques of Teaching English for High School Teachers" of this area from August 30 to Nov. 15, 1980. Speaking at the inaugural session, Mr. C.P. Tewari, Reader in-Charge, Centre for Adult and Continuing Education, said that the need of improving teaching techniques for high school teachers was a must and that a joint effort and cooperation of all Educational Institutions in this field was very essential to raise the standard of high schools in this part of the country. Mr Tewari informed the teachers gathering at the function that NEHU through the Centre for Adult and Continuing Education had organised short courses, seminars and symposia in the past for the benefit of teachers and students alike. He assured that the Centre would organise many more courses in the future for their benefits.

The topics covered in the course included : Empty words, Language errors; Vocabulary; Interpreting poems; Structure of English language; Speech sounds, Grammar, Pronunciation, Words formation and Writing skills etc. Participants would be given practical assignments where they would try to find out creative ways making a class involvement in their teaching career. The course would also provide them with new methods of teaching and class participation, so that the present teaching system would result to a give-and-take process in high school learning. It is hoped that the course would improve both teachers and students in this region.

There are 35 regular teacher-participants in the course from various High Schools of Shillong. Resource persons in the course Dr. B.M. Sagar, Mr. V,D. Singh, Mr. R.K. Jayaraman and Mrs. Jean D'Souza, are teachers of the CIEFL, Shillong.

Plea for linkage between education and development systems

Dr. M.S. Swaminathan, Member (Education), Planning Commission pleaded for interlinking of the education system with employment and development systems. The academic community should be sensitised to the problems and means of the poor by providing opportunities for interaction with real life situations.

Dr. Swaminathan was delivering his key note address at a two-day seminar on educational reforms held recently in New Delhi. Organised by the National Institute of Educational Planning and Administration, the seminar was attended by Education Secretaries and Directors of Education from various States and Union Territories as well as senior officials of the Ministry of Education, Planning Commission, University Grants Commission and NCERT.

Dr. Swaminathan said that the common pattern of Education for all the diverse groups in the country should be replaced by a diversity of models suited to varying needs and circumstances of different areas. This would permit flexibility of methods and means of delivery of education and speed of response. It would also enable the use of both the formal system of education where it existed and the development of non formal methods where these were more relevant. The content of many educational courses could be improved by dialogue with Industry and other users.

Shri P. Sabanayagam, former Union Education Secretary said that the democratisation of education did not mean merely provision of facilities for deprived sections; it also meant ensuring that they had reasonable chances of success. He stressed the need for identification of groups for whom education was sought to be given including the age group 3-6, which had been neglected.

Prof. M.V. Mathur, Director of the Institute, said that there was need for making more persistent attempts to provide effective education at all levels by adoption of non-traditional means. The resource constraints were such that mere expansion of traditional methods would not be able to solve the problem.

Need to reform university system stressed

Dr. Jagannath Mishra, Chief Mintster of Bihar, said in Patna that the Government would give topmost priority to the law and order situation in the universities and colleges. He was addressing a meeting of the Vice-chancellors of state universities. He said that the government was determined to restore normalcy on the campus by regularising teaching and examination sahedules. An ordinance making the use of unfairmeans a cognizable offence is being promulgated. Now onwards there would be summary trial of the persons including students, invigilators found adopting unfairmeans at the examinations. He said that the sanctity of examinations would be maintained at all costs. The Chief Minister urged that all pending examinations including those of 1980 be completed by the end of March 1981. He allowed three months' grace to his earlier announcement in view of the Vice-Chancellors' inability to complete 1980 master examinations upto the end of 1980. He however pointed out that the 1979 master examinations must be completed by the end of the year. Dr Mishra requested the universities to arrange additional classes during vacations to cover up the courses. The government was prepared to reimburse all the expenses incurred in payment of remuneration to the teachers engaged in taking extra classes. He also requested the Vice-Chancellors to send proposals for construction of separate examination halls in all colleges to avoid suspension of classes during examinations. With regard to promotion of sports and cultural activities in the universities, the Chief Minister said that a sum of Rs five lakhs had already been sanctioned in this behalf. Every college should have a physical training instructor. He also said that the Vice-chancellors should take steps for the implementation of the new university ordinances at the earliest. The constitution of new Syndicate should be completed as soon as possible. He asked the Inter-University Board to prepare uniform statutes for promotion of lecturers to the post of readers in every university of the State.

The Vice-Chancellors later met Dr. A.R. Kidwai Governor of the State, at the Raj Bhavan and discussed with him the problems of law and order and financial conditions in the universities. Dr. V.S. Jha, Chairman of the State University Enquiry Commission was also present during the course of discussion.

Senates to meet at 15-day notice

Special meeting of the Senate of a University can now be held on 15 days' notice in the universities of Bihar according to the new statutes framed by the Bihar Inter-University Board. The Board met under the chairmanship of Dr. S.P. Sinha in Patna. It felt the necessity of holding special meeting of Senate in order to enable the universities to constitute new syndicate according to the amended university ordinances. The Vice-Chancellors of Ranchi, Bhagalpur, Magadh, L.N. Mithila. K.S. Darbhanga universities, the Education Commissioner and the Director of Higher Education also attended the meeting.

Under the new ordinance, the universities are required to frame statutes for (a) defining powers and functions of Proctors and Coordinators of College Development Council; (b) representation of principals of colleges in the Academic Council; (c) prescribing manner of appointment of Deans of faculties; (d) constitution, powers and functions of Advisory council to be set up in each constituent colleges; (e) code of conduct for employees of the universities; and (f) to provide for other service conditions of teachers. The Board also approved the recommendations of the temporary lecturers' Absorption Committee to the effect that if a temporary lecturer has completed at least 18 months service on 30th June, 1977 by holding more than one appointment in same college or different colleges, he should be considered for absorption in regular service if at least one of the appointments held by him had been made on the basis of advertisement as provided in the statutes.

Reappraisal of collegiate education

The Tamil Nadu Education Minister C. Aranganayagam called for a reappraisal of the entire collegiate education in as short a period as possible so as to restore to it dignity and value. Participating in the Teachers' Day celebrations under the auspices of the Association of University Teachers, the Minister said that clashes and agitation amongst students had become a common feature and even communal hostilities were aroused in campus as well as hostels. In fact, it was this feature which perhaps compelled the Bihar Government to pass an ordinance proposing drastic punishment for copying in examinations. He said the malady had become pervasive and some serious thought had to be given to it. Mr Aranganayagam regretted that all this led to a sharp fall both in quality and standards. With the result although degrees and post graduates degrees were flunted but seldom did these reflect knowledge commensurate with the qualification. Mr Aranganayagam urged the teaching community to put forth their suggestion to arrest this rot and make collegiate education meaningful. The Minister also said that the Union Education Ministry and also the University Grants Commission had expressed themselves against starting of new colleges. In fact the approval for the setting up of two new universities in Tamil Nadu had been granted under the express condition that no new colleges would be started.

The Minister pointed out that the centre and the UGC had taken this view since a large section of the population were still illiterate and the primary objective was to provide universal elementary education to the vast masses.

Indus script deciphered

The Indus script which was considered undecipherable has been deciphered by Prof. S.R. Rao, a senior archaeologist who is now a Nehru Fellow. These achievements have been vitally acclaimed by leading archaeologists all over the country. The deciphernment has brought to light that the pioneers in simplifying a picture writing into an alphabatic one were the Harappans, as the Indus valley people are known. Dr. Rao said that we had succeeded in deciphering the writing on as many as 1,8 0 seals. The Indus valley people, the authors of the oldest civilisation of India, have left for posterity as many as 3,000 seals and seal-impressions bearing short inscriptions in which pictures of birds, animals and insects appeared side by side simple cursive signs resembling modern English or Roman alphabets. Ever since Harappa and Mohenjo-Daro, which are now in Pakistan, were discovered in the early Twenties of this century and excavated in the Thirties, attempts were being made by scholars to decode the enigmatic writing on the seal. Dr. Rao said with the decipherment of the script, it could be said that the greatest contribution of the Indus valley civilisation to the progress of mankind was the invention of the alphabet, though the Greeks added a a few vowel signs.

Prof. K.D. Bajpai, President of the Epigraphical Society of India and the Archaeological Society of India, has said that "Dr. Rao's conclusions are convincing. He has proved with adequate documentation that the Indus script furnishes the first important clue to the origin of alphabet".

Classified Advts.

PANJAB UNIVERSITY
CHANDIGARH
Advertisement No. GP/MI-80

The Vice-Chancellor will be glad to correspond with eminent scholars who have won recognition and published work of high quality and/or are actively engaged in research with ten years' experience of teaching & or research for appointment as Professor, State Bank of India Chair in Entrepreneurship and Rural Development in the Department of Commerce and Business Management.

Initially the tenure of this Chair is five years and will be renewable for further periods as may be decided by the University. The incumbent will be expected to supervise and conduct research studies, publish research findings and guide Ph.D. scholars in addition to participation in regular teaching and training programmes of the Department. The post will be in the grade of Rs. 1500-60-1800-100 -2000 -125/2-2500 with allowances as admissible under the rules.

Those interested are required to write to the Vice-Chancellor enclosing their bio-data with a list of their published work by **October 20, 1980**.

PUNJABI UNIVERSITY
PATIALA

Corrigendum to Advt. No. 40/PRO/SPS/EST/80 published in this Issue on page 553

The last date for receipt of applications for the post of Lecturer in Geography only, both direct and through proper channel, would be **October 7, 1980** and not October 14 and 17, 1980 as already notified.

REGISTRAR

Pantnagar to train officers

The Directorate of Extension of the G.B. Pant University of Agriculture and Technology has prepared a programme to provide training to officers of various government departments and nationalised banks in new agricultural technology in the next four months. The officers expected to participate in the programme belong to IAS, PCS, UP Agriculture Service, Defence Services and Rural Development Service of State Bank of India and Bank of India. The duration of these courses will vary from fifteen to thirty days. The trainees would be acquainted with the new agricultural technology for increasing production of various groups of crops. They would also be imparted training in allied occupations like dairy, poultry farming etc. Field trips to various research centres will also be organised for spot study.

Varsity makes Punjabi compulsory for its jobs

Dr. Bhagat Singh, Vice-Chancellor, Punjabi University, Patiala, said that the knowledge of Punjabi would be made compulsory for those seeking employment in the university. The Vice-Chancellor informed that the agenda and proceedings of the meetings of the Senate, Syndicate and the Academic Council were being circulated in Punjabi. 85% of the work in the university offices was also being carried out in Punjabi. The State Government has also decided to allow Punjabi as the medium of instruction for the State Civil Service Examinations.

National law institute proposed

The Bar Council of India is planning to set up a National Institute of Law. The project is estimated to cost nearly Rupees seven crores. It would be located in a State which could provide 30 acres of land and bear 50 per cent of the cost. Mr. Ranjit Mohanty, Chairman of the Council, made a statement to this effect in Vishakhapatnam. According to him the institute would be a residential one and would make selection of bright students from all over the country for specialised training in different legal fields.

Salam honoured by Physics Association

The Indian Physics Association, the largest organisation of physicists in the country, has decided to bestow its first award to Prof. Abdus Salam, the noble laureate who heads the International Centre for Theoretical Physics in Trieste, Italy. Prof. Salam who was born in Pakistan and is a domicile of England is being honoured with the R.D. Birla Memorial award for his fundamental contribution in physics. Prof. Salam's work in unifying the week and electromagnetic interactions among the sub-atomic particles won for him the Noble price in Physics for 1979 along with Prof. Glashow and Prof. Weinberg of the United States of America.

Autonomy Regained

The recent promulgation of university ordinances in Bihar is a step in the right direction. The campuses were afflicted with variety of problems. But the maintenance of law and order of late had assumed a paramount importance. The frequent gheraos and ugly demonstrations had become the order of the day. In this context the university Proctors to be appointed under the provisions of the new ordinances will go a long way in restoring peace in the universities. If imaginatively used, the proctorial system and the court of honour can provide an effective mechanism through which much can be achieved with dignity and decorum. The entry of police on the campus equally disliked by civil authorities and the university community can now be avoided in most cases. Proctor being a person of authority having an ex-officio membership of various decision-making bodies of the university can effect a liaison between the students and the university. He can be the mouthpiece of students grievances and their genuine demands. He can also be their sincere adviser on various academic and non-academic matters. His timely actions can avoid many situations becoming critical on the campus. He can indeed absorb many stresses and strains.

The declaration of the examination staff as "public servants" by the State Government during the examination period will now ensure adequate protection for the invigilators. This was in fact demanded by teachers and Karamcharis all along. With these safeguards, examinations hereafter an expected to be conducted without much hinderance. The sanctity of the examinations must be restored at all costs. The examination schedules which have been lagging far behind must be rigidly followed to avoid any further demand to the interests of students.

The revival of selection committees in the universities and taking away the work of faculty selections from the purview of the State Public Service Commission and University Commissions will re-establish the autonomy of universities. The Association of Indian Universities has been emphasising almost for a decade on the State authorities to allow the universities to exercise their basic right to select their own teachers. Once this has been conceded the ball has moved to the court of the universities. It should be played well. All fears of nepotism and caste considerations should be allayed and only the best personnel should be allowed to get into the portals of higher education, who can earn credit for their alma mater.

News from Agril. Varsities

Ranchi agricultural college celebrates its silver jubilee

Dr A.R. Kidwai, Governor of Bihar, while inaugurating the year-long silver jubilee celebrations of the Ranchi Agricultural College reminded the farm scientists of the stupendous task of fulfilling the aspirations of the people for agro-economic development of the tribal belt of Chotanagpur. Dr Chandrika Thakur, Special Officer of the proposed Birsa Agricultural University presided at the function.

The Governor recalled the contributions of the college which completed 25 years of existence and took scientific farming on the doorsteps of the people of the region. He stressed the need for heart searching by the scientists involved in the task and asked them to look back to their achievements and shortcomings. This was a crucial occasion for analysing the shortcomings. The Governor called upon the farm scientists to create agro-climatic conditions to meet the challenge of scientific development of one of the economically most backward regions of the country.

In his presidential address Dr. Chandrika Thakur explained the objective of the proposed Birsa Agricultural University at Ranchi which he said did a lot for the development of Adivasis.

Indian scientists abroad offer short services

Nearlly 250 scientists of Indian origin settled abroad have offered to lend their services for some weeks to help in the country's development. The offer is being examined at the manpower division of the Council of Industrial and Scientific Research, New Delhi. Most of these scientists are now in the US. Canada and West Germany. The Indian missions in a number of countries were some time ago asked to send particulars of outstanding engineers and technologists who could spend some time in Indian Industries and suggest improvements. The step was in pursuance of a project on the transfer of know-how through expatriate specialists of Indian origin, being funded by the United Nations Development programme.

The programme, is oriented to solving technical problems faced in various public and private industrial establishments. A similar project aided by UNDP in Turkey was utilised by authorities in Istanbul to finance trips by Turkish scholars to home to lecture at universities.

The Council is examining communications from various industrial organisations which have problems that need handling through a high degree of technical expertise. It is somewhat like match-making. The visits by scientists were expected to begin towards the end of this year, when many of them can get leave from their psesent work. The scientists, who would come individually, are basically expected to provide specific technical inputs towards the development of the country in priority areas. The expenses on the scientists' travel and their daily subsistance allowance at UN rates during the stay here would be borne by UNDP. It has initially allotted 100,000 dollars to India from the allocation for this year.

From test-tubes to fields

Horticulture scientists of Himachal Pradesh Agricultural University's Regional Fruit Research Station, Mashobra have developed test-tube plants of apple, cherry and poplar. According to Dr D.P. Sharma, these test-tube plants have been developed by the plant tissue culture technique. The plants grown by this technique provide extra rapid multiplication and disease-free varieties. This technique can revolutionise horticulture and forestry in Himachal. Dr Sharma says it is possible to produce more than one lakh plants in a year from a single shoot by this method. These plants are grown in test-tubes or conical flasks in a medium consisting of inorganic nutrients, sugar, vitamins and plant growth regulators. The experiments were started by Dr Sharma in 1977. But the programme got a boost in 1979 by the award of the project to this station which is running under the guidance of the world famous botanist, Prof P.N. Mehra. The scientists are now standardising techniques for transferring these test-tube plants to vulnerable field conditions. Efforts are being made to produce a virus-free strain of the "red gold" apple through this technique.

Mango grafting perfected at Ratanagiri

The Konkan Krishi Vidyapeeth has standardised the technique of stone grafting for the production of Alphonso mangoes. Though this method of grafting is not altogether new but this is for the first time that efforts are being made to put it to commercial use. The Vidyapeeth is also imparting training in this method to farmers and extension officers of panchayat samitis. In this simple stone grafting technique a germinating mango stone is selected and the growing shoot is beheaded. In the slit made on an Alphonso budstick of 10 cm. to 15 cm. is fitted. The fastened graft is kept in a plastic bag or in an earthen pot and within a fortnight the buds start aprouting. A skilled worker can prepare around 100 grafts a day. Out of 650,000 hectares of identified fallow land, even if 100,000 hectares is to be brought under Alphonso cultivation about ten million grafts would be needed, warranting at least a few farmers in every village attaining proficiency in the stone grafting process. This would also mean reduction in transport cost and prevention of damage during transportation. There is a great demand for Alphonso mango graft in the Konkan region.

News from UGC

UGC team visits Jammu Varsity

A committee of the University Grants Commission consisting of Shri J.D. Sharma, Hony. Secretary, IUACE, Dr. A.K. Jalal-ud-Din of NCERT and Dr. M.L. Mehta, Deputy Secretary, UGC, visited the University of Jammu recently to assess the work of the Centre of Continuing Education for the Fifth Plan and to recommend further grants for the Sixth Plan period. The committee held a series of discussions with the administrative as well as the academic staff of the university. It also held discussions with the members of the advisory committee of the Centre.

As a result of discussions, the committee assured that grants amounting to more than Rs. 3 lakhs would be made available to the university during the Sixth Plan for catering to the needs of weaker sections of the society both in urban and rural areas.

The university will henceforth adopt one village to begin with where after conducting proper surveys the need of the community will be ascertained and both colleges and university academic community with active coordination of Adult, NSS, Education wings and other government agencies will work together to eradicate illiteracy, social evils etc. An attempt will be made to open a sub-branch of the centre of continuing education in each affiliated college of the university at Kathua, Udhampur, Poonch and Bhadarwah, who will carry out this programme in their respective areas. It was also decided to identify two schools in the far flung areas of the university where academic standard of the students will be improved so that they may be able to compete with their counterparts in main cities in higher competitive examinations. For affluent and middle class population only self-supporting courses will be started.

The university is also starting coaching classes for Company Secretaryship and Cost Accounancy within a month's time. Coaching classes to prepare candidates for various competitive examinations like NDA, IAS, Banking etc. wil also be started soon and the resource persons within the State will be actively trained to undertake this work.

Gandhian fellowships awarded

The University Grants Commission has awarded three research associateships and two junior research fellowships for promoting research in Gandhian thought. These research associateships have been awarded to the holders of Ph.D. degree or those who had equivalent research work or field experience. The associateships are tenable for three years and could be extended by another two years. The awards are of Rs 1000/-, Rs. 12,00/- and Rs. 1400/- per month with a contingency grant of Rs. 2,000/- per year. The awards have been made to Dr. Shiela Sen of Jawaharlal Nehru University, Dr. Anthony Chrisppanath of Karnatak University and Dr. B. Prasad Pradhan of Utkal University. The junior research fellowships are of Rs 400/- per month for Gandhian studies. These are tenable for four years and the value can be raised to Rs 500/- after an assessment on completion of two years.

Patna and Calcutta to start correspondence courses

The University Grants Commission has accepted in principle the proposal of Calcutta University to start correspondence courses for BA and BCom degrees. The Commission has approved a similar request of Patna University as well. With these, almost every State in the country will have facilities for correspondence courses. Many other universities are permitting students to appear privately at their examinations. At present 21 universities and one autonomous institution are offering correspondence course with assistance from Uuiversity Grants Commission. The number of students in these courses is about 1,15,000 excluding pre-university and intermediate classes as against nearly 26,00,000 students in the regular courses. The University Grants Commission has already approved in principle the starting of correspondence courses for the degree of Master of Business Administration. The programme will be initially introduced in three universities.

Personal

1. **Prof. R. N. Dogra has been appointed Chairman of the Board of Governors of the Indian Institute of Technology, Kanpur.**
2. **Prof. B.S. Ramakrishna has taken over as the Vice-Chancellor of the University of Hyderabad.**
3. **Dr. M. Nagaraj, Professor of Botany, Bangalore University, has been appointed Vice-Chancellor of Gulbarga University.**
4. **Prof. Sheik Ali, Head of the Department of History, Mysore University, has been appointed Vice-Chancellor of Mangalore University.**
5. **Dr. G. L. N. Rao of the Jamshedpur Cooperative College, has been invited by the USSR Academy of Sciences to participate in the International Symposium on Generalised Functions & Application to Mathematical Physics to be held in Moscow during November, 1980.**
6. **Mr. G.S. Sivia, Deputy Secretary (Sports), AIU, has been appointed Hony. Secretary of the Amateur Athletic Federation of India for 1980-81.**

Foreign News

Cambridge team at Taxila

An archaeological team from Cambridge University has gone to Pakistan to find how the ancient city of Taxila developed into the principal town of the Indus-Jhelum and Doab region. Recent explorations at Taxila, according to the Cambridge team, reveal that it might have been one of the earliest and longest-occupied urban centres in South Asia.

Discovery of pottery dating back some 4,000 years at the site, shows that Taxila was occupied at the end of the Indus civilisation and continued to be inhabited till at least a few hundred years before the beginning of the Christian era.

Earliest deposits previously found at the site date from 500 BC when the area became part of the Persian Achaemenid empire. Alexander the Great is said to have spent a few weeks in the city in 326 BC.

Nearby, in the small valley, three separate city sites are known, the earliest two being the Bhir Mound with several successive periods from the sixth to second century BC.

The third city site, Sirkap to the north-east, is a planned settlement with an acropolis and a lower town. Founded by the Greeks in the second century BC, it is enclosed by a 55 km long wall.

New discoveries have been made within the southern part of the site at the western end of the Hathial ridge which forms a natural acropolis.

The Cambridge team noted a deposit of occupation more than two metres deep cut by a modern cemetery. At the base was found red paint as at the ancient site of Kot Diji in Sind province.

It is considered likely by the Cambridge team that more than 12 metres of deposits piled up in the Hathial ridge area in the last few centuries before the advent of the Christian era to form the Sirkap acropolis.

The fortified acropolis, they think, must have been built around the time of Alexander the Great and before the laying out of the urban site to the north. At an earlier period, Taxila must have been an Achaemenid town.

British financial assistance for Indian students

Thirtyone Indian post-graduate students, mainly in the fields of science and technology, have won financial awards from a British scheme supporting Overseas Research Students Fees for the 1980-81 academic year. This is the second largest number of awards won by a Third World country. The scheme is run by the British Committee of Vice-Chancellors and Principals. Malaysia tops the list with 39 awards. In all, 561 awards were made to students from 65 countries; 287 of the awards were to students from Commonwealth countries. The value of the award is the difference in fees for a British post - graduate student and an overseas post-graduate student. The awards will be renewed for a second and third year subject to the satisfactory progress of the students concerned.

Indo-British collaboration in science teaching

Three British science teachers are visiting India next week to take part in a science teacher-training workshop in Hyderabad organised by the Central Board of Secondary Education (CBSE) in collaboration with the British Council. The British visitors —Dr. Fairbrother, Mr. May and Mr. Gillard—are financed jointly by the British technical co-operation programme to India and by CBSE. The workshop will follow up a nine-month training course at Chelsea College, University of London, where two groups of nine secondary-stage science teachers from India have had special training in modern methods of science teaching and the writing of curriculum material. A third group will shortly leave for similar training.

UK scholarships for Indian students

Two people from Delhi have won Rhodes Scholarships to Oxford for 1980-82. They are Miss Amrita Cheema, who has an M.A. from Delhi University and is to read for an M. Phil. in History at Exeter College, Oxford, and Mr. Rajeev Kalaswad, who has an M.A. from Bangalore and is to read for an Honours degree in English at St John's College, Oxford.

Rhodes Scholarships have been awarded in India since 1946. The founder, Cecil Rhodes, hoped that Rhodes Scholars would have as their highest aim the performance of public duties.

Ten other Indian scholars have been awarded Inlaks scholarships to British universities for 1980-82. They are Sanjay Kathuria, Aminava Sen, Amlan Dasgupta, Sanjeev Agarwal and Nandita Narain, who are going to Oxford colleges; Gaiti Hasan, Mukul Kesavan and Geeta Luthra, who are going to Cambridge colleges; Mukund Padmanabhan, who is going to the London School of Economics; and Anupam Srivastava, who is going to Imperial College, London.

The Inlaks Foundation was set up in 1976 by the late Shri Indu Shivdasani. Every year the Foundation awards a number of scholarships to outstanding Indian students for post-graduate studies in the United Kingdom.

ROKKAN Prize in comparative research

The International Social Science Council, in conjunction with the Conjunto Universitario Candido Mendas (Rio de Janeiro) is setting up a bi-annual PRIZE named after Stein ROKKAN in homage to the memory of this great scholar, to be awarded every two years, starting in 1981, and amounting to U.S. $2,000.

The Prize is intended to crown a seminal contribution in comparative social science research written in English, French or German, by a scholar under forty years of age on 31st December 1981. It can be a manuscript or a printed book or collected works, in each case published after 1979.

Four copies of manuscripts typed double space or of printed works shall be delivered together with a formal application for the prize to the International Social Science Council before 31st March 1981. Manuscripts and publications received shall not be returned.

Works submitted shall be evaluated by the International Social Science Council with the assistance of appropriate referee or referees, under the supervision of the European consortium for Political Research (ECPR) and its Chairman. The AWARD shall be made by the ISSC General Assembly meeting in November 1981 on the recommendation of the ISSC Executive Committee. Its decision shall be final and not subject to appeal or revision.

The amount of the Prize may be shared by two or more applicants, should it be found difficult to adjudicate between equally valuable works submitted.

For further enquiries, please write to the Secretary-General International Social Science Council, Unesco, 1 rue Miollis, 75015 Paris, France.

Sports

NIS draw up coaching schedule for Asiad teams

The Union Government have approved a new financial pattern for holding coaching camps in preparation for the 1982 Asian Games, according to Mr R.L. Anand, Director of the Netaji Subhash National Institute of sports. A special feature of the new pattern is that diet allowance per day for trainees has been raised from Rs 16 to Rs 19 including Re 1 lodging expenses. However, diet allowance for participants in coaching camps for national and international competitions other than those for the Asian Games would continue at the old rate of Rs 16 per day,

Under the new financial pattern, sports federations have been allotted first two camps of six-week duration and third camp of four-week duration per annum effective from the current year. At first camp, the number of participants would be four times of those expected to participate in the Games. It would be reduced to three times at the second camp and double of the actual number of participants at the third camp. Coaching camps for other international meets would be in addition to these camps. The director said that about Rs 40 lakhs were expected to be incurred on diet expenses of the camps for the Asian Games. He said that the first athletic camp for men in preparation for the Asian Games had begun at the institute on Sept 8. Ninety athletes were invited for this camp but so far 50 had turned up. For 60 women athletes, a similar camp began at Bangalore from Sept 8. Mr R.L. Anand said that he had proposed to the Haryana Government to hold wrestling camps for the Asian Games at Rai where Asian wrestling would be staged. Mr Anand said that the Rajasthan Government had agreed to stage the sixth National sports festival for women at Jaipur from Nov 19 to 23. They had, however, expressed their inability to organise swimming competitions because of cold weather in November. Efforts would be made to stage these competitions at some other place. The Director also revealed that the finale of the All-India rural sports would take place at Chandigarh when competitions in football, volleyball and gymnastics would be organised from Jan 18 to 21. On the last day, an overall rolling trophy worth over Rs 6,000 would be awarded to the victorious team .

Prize competition for published literature in physical education

Under the Scheme of National Prize Competition for the Published Literature on Physical Education and Sports etc. sponsored by the Society for the National Institutes of Physical Education and Sports (SNIPES), the Lakshmibai National College of Physical Education, Gwalior invites entries from Publishers and Authors of books published on Physical Education, Sports, Recreation, Health Education and Yogic Physical Culture for the Eleventh National Prize Competition.

The prize will be given to published original works of high standard in Physical Education Sports etc. These prizes will be awarded to the authors of books, if any, adjudged to be sufficiently high quality to merit a prize in the Competition, There will be five prizes of the value ranging between Rs 1500 to Rs 5000 each.

Last date of receiving entries is 30th November, 1980. For entry form and the rules of the competition please write to the Principal, Lakshmibai National College of Physical Education, Shaktinagar, Gwalior 474 002 (M.P.) enclosing a self addressed envelope of 23 x 10 cm.

World wrestling to be held in India

India will host the second World Arm Wrestling championships at Calcutta in October this year. Eight countries—USA, Canada, Brazil, Australia, Bangladesh, the United Kingdom and Japan—are expected to participate in the championships. The first World Arm Wrestling championships were held last year in Canada and was attended by only four countries.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Puri, Veena. Afghanistan: A social and cultural study. University of Poona.

2. Srinivasan, Sankaran. Bio-cultural variations among four Tamil speaking Brahman populations. University of Poona.

Psychology

1. Deshmukh, Kalyani Prabodhachandra. Personality characteristics of the physically handicapped. Nagpur University.

2. Ezekiel, Lachhman Singh. Superstitiousness: Its personality correlates among the college teachers. Nagpur University.

3. Gupta, Anuradha. Indices of psychological stress related to level of aspiration and achievement motivation. Ravishankar University.

4. Tewari, Ashta Nand. An empirical study of the development of achievement motive as a function of prolonged deprivation. University of Gorakhpur.

Sociology

1. Seetha Lakshmi, A.G. Land and society. University of Delhi.

2. Singh, Sohanpal. Gramin samudaya mein vibhin jatiyon kee vyavsayik gati sheelta ka samajshastriya adhyayan (Hindi). Jiwaji University.

Political Science

1. Deol, Harmander Singh. A study of political elite in Punjab with special reference to legislators. Panjab University.

2. Hirawat, Saroj. Governor in the Indian State: Power profile and role identification. University of Rajasthan.

3. Kaviraj, Sudipta. Split in the Communist movement in India. Jawaharlal Nehru University.

4. Krishna Swamy, V.R. Socio-economic justice in Tamil Nadu: An analysis of public policy since 1967. Karnatak University.

5. Shrivastava, Kamata Prasad. Madhya Pradesh mein July 1967 va March 1969 ke madhya mein karyarat sanvid (Sanyukt Vidhayak Dal) shasan ka samikshatmak evam vishleshanatmak adhyayan (Hindi). Jiwaji University.

6. Singh, Krityanand. India's attitude towards Nepal, September 1946—March 1963. University of Bihar.

7. Sudesh Raj. Union Territories in Indian Constitution. Panjab University.

Economics

1. Arya, I.C. Size, technology and productivity of cement industry in India. University of Rajasthan.

2. Cauvery, R. The Economics of powerloom weaving complex in Salem District with particular reference to Momarapalayam, 1977. University of Madras.

3. Dar, Khurshid Ali. Financial management of public sector undertakings of Jammu and Kashmir State. University of Kashmir.

4. Das, Manoranjan. Problems and prospects of agricultural taxation in Orissa. Berhampur University.

5. Divakara Rao, Tyda. Burden of Indian taxation. M.S. University of Baroda.

6. Parikh, Manda Ramlal. A critique of foreign trade policy of a developing country with special reference to India. M.S. University of Baroda.

7. Ramaiah, P. Tribal economy in Telangana with special reference to the Warangal District. Kakatiya University.

8. Singh, S.K. Growth and pattern of state expenditure: A case study of Rajasthan State, 1956-57 to 1975-76. University of Rajasthan.

9. Venkata Ramana, Kotturi. India's trade with the socialist countries of East Europe. Andhra University.

Public Administration

1. Joshi, Mohan Chandra. Local administration in Arunachal Pradesh. Gauhati University.

Education

1. Goswami, Dibya Hash. University administration in North East India. Gauhati University.

2. Hirunval, Aram Prasert. A study of pupils' self-concept, academic motivation, class-room climate and academic performance. M.S. University of Baroda.

3. Majagi, Ishwar Mallappa. Developing a battery of tests for selecting candidates to teacher education courses. Karnatak University.

4. Parlikar, Kalpana Romeschandra. A study of suitability of programmed learning in home science education for adolescent girls. M.S. University of Baroda.

5. Portia, R.R. Structure and functioning of the academic departments of an Indian university : A case study. Andhra University.

6. Sukumaran, D. A status study of English medium schools in Maharashtra. University of Poona.

7. Upadhyaya, Dineshchandra Ganpatishankar. Construction and standardization of the proficiency test in English for secondary school teachers of Gujarat. Sardar Patel University.

8. Varshney, N.C. Organizational climate of different types of schools and reactions to frustrating school situations among adolescent boys studying in these schools. University of Rajasthan.

9. Vyas, Vasumati Chimanlal. Factors affecting the teacher morale. M.S. University of Baroda.

Commerce

1. Gupta, Sat Paul. Population, population control and the problem of unemployment in Jammu and Kashmir State. University of Jammu.

2. Nagaraja Naidu, V. Finances of Andhra Pradesh State Electricity Board. Sri Venkateswara University.

HUMANITIES

Philosophy

1. Balasubramanian, P. Concept of presupposition : A study. University of Madras.

2. Paik, Madan Mohan. A study of some personality dimensions and backgrounds of juvenile delinquent behaviour. Rabindra Bharati.

Linguistics

1. Nath, Mrinal Kanti. A semantic study of Sanskritic lexis in early Bengali. University of Calcutta.

2. Sahu, Bhagwat Prasad. Sabariya boli ka rupkriyatmak adhyayan. Ravishankar University.

Literature

English

1. Agrawal, Balram Prasad. Mulk Raj Anand : A study of miseries, struggles and splendours in his fiction. Ravishankar University.

2. Chatterjee, Shymal Kumar. Emerson and Tagore: A comparative study. Visva-Bharati.

3. Chavan, Sunanda Pratapraje. Contribution of women poets to Indian poetry in English, 1850-1970. Shivaji University.

4. Lahiri, J.N. Aspects of life in the novels of E.M. Forster. North Bengal University.

Sanskrit

1. Bagchi, Śanti. Studies in Satapatha Brahmana. University of Calcutta.

2. Gulshan Kumari. Mahamahmopadhyaya Sri Srijiva Nyayatirtha ke natak. University of Delhi.

3. Jalaji, Ramnika. Moral codes as prescribed for women in the Smritis. University of Jammu.

4. Mishra, Jai Govind. Studies in the philosophy of Asanga. University of Gorakhpur.

5. Ravindra Devi. Jain stotra samiksha based on Mahavira and Parsvanatha. University of Delhi.

Hindi

1. Gupta, Nirmal. Dwivedi yug kee prishthabhumi mein Ayodhya Singh Upadhyaya Hariaudh ka vishisht adhyayan. University of Jammu.

2. Lavate, Sunil Shripad. Yashpal : Vyaktitv aur krititv. Shivaji University.

3. Mehta, Saroj. Rajasthani evam Punjabi bhashaon ka tulnatmak roop vaigyanik adhyayan. University of Rajasthan.

4. Pandey, Ashok Kumar. Madhyadeshiya Hindi ke unmesh kal ka shabd vaibhav, 1399-1503. Jiwaji University.

5. Satyadeo, Shobha. Sanskrit alankarashastra ke sandarbh mein Maharaj Jaswant Singh ke Bhasha Bhushan ka shastriya anusheelan. University of Gorakhpur.

6. Shakuntala Devi. Upanyaskar Varindavanlal Verma ke nari patron ka swarup. Panjab University.

7. Sharma, Sheela. Sathottar Hindi kavita kee samajik chetna. University of Gorakhpur.

8. Shashi Prabha. Structural study of contemporary Hindi drama, 1950 to date. Panjab University.

9. Tewari, Sudhakar. Hindi Purvi lok sahitya mein prakriti. University of Gorakhpur.

10. Thakur, Kavishwar. Swatantrottar Hindi kavita mein rashtriya-antarrashtriya awabodh ka shaikshik adhyayan. University of Bihar.

11. Yugal Kishore. Dinkar kee kavya chetna. Panjab University.

Urdu

1. Faroqui, Abdulquader Gayasoddin. Urdu poetry and sufism : Historical survey and critical estimates. Shivaji University.

Oriya

1. Das, Ajit Kumar. Oriya geeti natya-o-Tara Bikashdhara. Utkal University.

2. Panda, Lakshmidhar. Upendra Bhaja sahityare samaj chitra. Utkal University.

Marathi

1. Choudhari, Shalini Wasudeo. Mahim Bhatt : Vyakti va Vangmay. Nagpur University.

2. Kulkarni, S.P. Madyhayugeen Marathiteel Sundarkande : Ek chakitsik abhyas. Nagpur University.

Persian

1. Jalli, Kulsoom. Riyazush Shuara. University of Calcutta.

Tamil

1. Alagiah, V. Antony John. Bible and Kural: A comparison with special reference to Biblical Proverbs and Song of Songs. University of Madras.

2. Amirthalingam, D. Treatment of poverty in Tamil poems. University of Madras.

3. Bhagavathi Ammal, K. Costumes of the Tamils. University of Madras.

4. Gurunathan, R. Characters in Akilan's novels. University of Madras.

5. Jayaprakash, N. Literatures of Maraimalai Adigal. University of Madras.

6. Mallica, G.M. The philosophy of Advaita as expounded in Srimad Bhagavata. University of Madras.

7. Murthy, D. A critical study of the common vocabulary of Tamil and Malayalam. University of Madras.

8. Rajamanickam, V. Tolkappiyar's literary techniques. University of Madras.

9. Sethu, R. Contribution of C.N. Annadurai's short-stories and novels for social renaissance in the 20th century. University of Madras.

10. Thangaraju, M. Stage Drama in Tamil, 1967-78. University of Madras.

Malayalam

1. Prabhakaran, P.K. Impact of translation from English on Malayalam with particular reference to Pavannal by Nalappat Narayana Menon. University of Madras.

Telugu

1. Lakshmana Reddy, V. The origin, growth and development of Telugu journalism. Nagarjuna University.

Geography

1. Chackochan, P.L. Historical and cultural geography of Venadu, Travancore c A.D. 1124-1729. University of Poona.

2. Patil, R.G. Plant geography of Western Ghats in Maharashtra. University of Poona.

3. Patil, Shanmukhagouda Rudragouda. Some aspects of urbanization in Karnataka. Karnatak University.

4. Shantaveerappa, H. Shimoga : A study in urban geography. Karnatak University.

5. Shri Niwas. Purvi Pathari pradesh main udyogikaran ka nagrikaran per prabhav. University of Gorakhpur.

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1. Bandyopadhyay, Suprasanna. Inscriptions of Tripura. University of Calcutta.

2. Behera, Dandapani. British annexation and administration of Ghumsur, 1836-66. Berhampur University.

3. Das, Bichitrananda. History of Mahuri, 1967-1850. Berhampur University.

4. Dutta, Promatha Nath. Impact of the West on the Khasis and Syntengs : A survey of political, economic and social changes, 1765-1874. Gauhati University.

5. Ganguly, Sourendra Mohan. Leftism in India: M.N. Roy and Indian Politics, 1920-48. Rabindra Bharati.

6. Ghosh, Shyamali. East Pakistan Awami League, 1958-71. Jawaharlal Nehru University.

7. Mathur, Vina Kumari. Role and position of women in the social, cultural and political life of Kashmir 7th to 16th century A.D. University of Jammu.

8. Ray, Dilip Kumar. Museum : Its role in military studies in India. University of Calcutta.

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Mukerji, S.K. "Developing colleges of basic sciences of humanities in agricultural universities". *Journal of Higher Education (Delhi)* 5(2); Autumn 79 : 195-201.

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PUNJABI UNIVERSITY PATIALA

Advertisement No.40/PRO/SPS/EST/80

Applications are invited for the following posts:

1. **READERS**: (One each in Philosophy, Astronomy and Space Sciences, Economics, Political Science, English and Punjabi)
(Grade Rs. 1200-50-1300-60-1900)

Qualifications

(a) Good academic record with a doctoral degree or equivalent published work. Evidence of being actively engaged in (i) Research or (ii) Innovation in teaching methods or (iii) Production of teaching materials.

(b) About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition is relaxable in the case of candidates with outstanding research work.

SPECIALIZATION

Reader in Philosophy

Indian Philosophy and/or Logic at doctoral level with the knowledge of Sanskrit.

Reader in Economics

(i) Economic Theory (Macro & Micro)
(ii) Economics of Industry
(iii) Public Finance
(iv) Economics of Development.

Reader in Political Science

(i) Modern Political Analysis
(ii) Contemporary Political Thought
(iii) International Politics.

Reader in English

(i) Literary Criticism
(ii) 19th Century Literature
(iii) 20th Century Literature.

Reader in Punjabi

Classical Poetry.

Reader in Astronomy & Space Sciences

(i) Stellar's Spectroscopy
(ii) Stellar Atmospheres
(iii) Stellar Structure & Evolution
(iv) Radio Astronomy
(v) Astronomical Techniques.

NOTE: Additional qualification for the Post of Reader in Economics, Political Science, English & Punjabi:

(i) Knowledge of Punjabi will be compulsory
(ii) Experience of Correspondence Courses will be given weightage.

2. **READERS IN LAW**: (Two)
(Rs. 1200-50-1300-60-1900)

Qualifications

At least a second class Master's degree in Law from a recognised University or its equivalent degree. Preference will be given to those who possess Doctorate in Law.

Desirable

About five years experience of teaching and/or research, out of which at least three years should be as Lecturer or in an equivalent position.

3. **LECTURER**: (One each in Philosophy, Astronomy and Space Sciences, Political Science, Geography & two in Economics)
(Grade Rs. 700-40-1100-50-1600)

Qualifications

(a) A Doctor's degree or research work of an equally high standard in the relevant subject, and

(b) Consistently good academic record with first or high second class (B in the seven point scale) Master's degree in a relevant subject or an equivalent degree of a foreign University.

(c) Qualifications prescribed in (b) above are relaxable in case the research work of a candidate as evident either from his thesis or from his published work is of a very high standard. If a candidate possessing a Doctor's degree or equivalent research work is not available or is not considered suitable, a person possessing consistently good academic record (Weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory / organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment failing which he will not be able to earn future increments until he fulfils these requirements.

NOTE: Persons who have already applied for the post of Lecturer in Geography in response to our earlier advertisement need not apply again.

Specialization

(Lecturer in Philosophy)

Candidates having specialization in Sikh Philosophy will be preferred.

Lecturers in Political Science, Economics and Astronomy & Space Sciences.

Same as prescribed above for the Post of Readers in these subjects.

NOTE: Additional qualification for the post of Lecturers in Economics, Political Science, English & Punjabi:

(i) Knowledge of Punjabi will be compulsory
(ii) Experience of Correspondence Courses will be given weightage.

4. **LECTURER IN BUSINESS MANAGEMENT**: (ONE)

Qualifications

A Master's degree in Business Administration or M.Tech. degree in Engineering with first class with the proviso that the incumbent would acquire a doctorate degree within a period of 5 years. In the case of allied subjects like Industrial Psychology, Personnel Management, Business Statistics, Cost Accountancy etc. where lecturers could be recruited with qualifications other than MBA and M.Tech., the minimum qualifications would be the same as prescribed for the post of Lecturers under item 3 above.

Specialization

Personnel Management and Industrial Relations.

5. **MUSEUM CURATOR (HUMAN BIOLOGY)**: (ONE): (Rs. 400-40-800/50-950)

Qualifications

At least second class Master's degree in Human Biology/Anthropology from a recognised University with a degree or Diploma in Museology. The candidate must have experience of working in a Museum relating to Human Biology. The selected candidate may be required to conduct field work in remote areas. Preference will be given to those having Ph.D. degree or published research work of the equivalent standard.

6. **RESEARCH ASSISTANT**: (English): (ONE) (Rs. 550-20-650-25-750)

Qualifications

Candidates should hold a Master's Degree in English from an Indian University with atleast 50 % marks or above or should possess equivalent qualifications from a foreign University. Persons possessing M.Phil or having Research experience will be preferred.

7. **RESEARCH ASSISTANT (HUMAN BIOLOGY)**: (Rs. 550-20-650-25-750)

Qualifications

Candidate should be atleast Second Class M.Sc. (atleast 55% marks) in Human Biology or equivalent subject, with atleast three years' experience of research. Candidate with Ph.D. degree or equivalent published work on the problem relating to sports will be preferred.

8. **RESEARCH SCHOLARS**: (Two each in Tamil Chair and Physics and one in English) (Tenable for two years in the first instance @ Rs. 400/- p.m. all inclusive).

Qualifications

Candidates should possess at least second class Master's degree with at least one year teaching/research experience after obtaining Master's degree provided that the condition of experience may be relaxed in the case of first class M.A.'s/M.Sc.'s provided further that a candidate with at least 55% marks both in B.A./B.Sc. and M.A./M.Sc. could also be considered in case no first class M.A./M.Sc. is available.

For Tamil Chair

Candidates with M.A. in Anthropological Linguistics, with Specialization in

Tamil language, Linguistics & Culture will be preferred.

9. **JUNIOR RESEARCH FELLOWS** (U.G.C.) (Three) Department of Physics @ Rs. 400/- p.m. all inclusive for first two years and Rs. 500/- all inclusive for subsequent two years.

Qualifications

Junior Fellowship is open to persons preferably below the age of 30 years, who have obtained a Master's degree of a recognised University in the first or high second division (with at least 50% marks or B in the seven point grade system).

NOTE: Candidates for teaching and research posts should possess working knowledge of Punjabi upto Punjabi Praveshka standard. Persons from outside Punjab could however be considered for appointment but they will be required to give an undertaking in writing that they will acquire the requisite qualifications in Punjabi within a period of two years.

GENERAL

Higher start within the grade admissible depending upon the ability and experience of the candidate. House rent and Dearness allowance, Provident Fund and Medical facilities according to the University rules.

Applications complete in all respects on the prescribed form accompanied by a crossed Postal Order worth Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Caste/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala, should reach the University by **14-10-80.** The forms can be had from the Production & Sales Officer, Publication Bureau, Punjabi University, Patiala on payment of Re. 1/- by sending a crossed Indian Postal Order drawn in favour of the Registrar, Punjabi University, Patiala, alongwith a self addressed envelope of the size of 25×10 cms. stamped with 30 paise postage which should be superscribed at the Top in bold letters REQUEST FOR APPLICATION FORM FOR THE POST OF———

Persons already in service should apply through proper channel. Government servants who are not in a position to submit their applications through proper channel before the due date should submit an advance copy before the due date and regular applications through proper channel by **17-10-80.**

REGISTRAR

JAWAHARLAL NEHRU UNIVERSITY

Advertisement No. Aca. III/9/80

Applications are invited for the following posts:

SCHOOL OF INTERNATIONAL STUDIES

Centre for Studies in Diplomacy, International Law & Economics

1. **Assistant Professor in International Law** (Temporary vacancy but likely to continue)

Essential Qualifications

(a) Consistently good academic record with at least a high second class Master's degree in Law with International Law as Specialisation or its equivalent qualification from an Indian/foreign University; and

(b) A doctor's degree or published work of an equally high standard.

Desirable Qualifications

Some teaching and/or research experience.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualification prescribed in (a) above.

Provided further that if a candidate possessing a Doctor's degree or equivalent work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil or equivalent degree or research work of quality) may be appointed **provided he/she has done research work for at least two years or has practical experience in a research laboratory/organisation** on the condition that he will have to obtain a Ph.D. degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Scale of Pay: Rs. 700-40-1100-50-1600 plus usual allowances as admissible to the members of the staff in the Central Universities.

Centre for Soviet and East European Studies

2. **Research Associate** (for a period of 3 years, extendable for another term not exceeding 2 years (Reserved for Scheduled Caste/Scheduled Tribe candidate, in the event of no Scheduled Caste/Scheduled Tribe candidate being found suitable, the post will be filled up from general category).

Qualifications

(a) A first or high second class Master's degree in any of the Social Sciences;

(b) A Doctorate Degree and Research experience in the field of Soviet Studies.

(c) Proficiency in Russian Language.

VALUE

The Research Associateship will be awarded in any of the following three categories, and carries the following fixed consolidated emoluments and no other allowances:

(a) Category 'A' Rs. 1000 per month

(b) Category 'B' Rs. 1200 per month

(c) Category 'C' Rs. 1400 per month

A contingency grant of Rs. 2000 per annum will be admissible to Research Associate.

Relaxation in any of the qualifications may be made (a) in favour of persons of eminence or of high academic/professional distinction and (b) in exceptional cases where adequately qualified persons are not available but are otherwise found suitable for the respective positions. It will also be open to the University to consider the names of suitable candidates who may not have applied.

The selected candidates will be expected to participate in the teaching and research programmes in the concerned disciplines in other Schools of the University as well as in the programmes offered in their own Centre of Studies.

Benefits of C.P. Fund-cum-Gratuity/G.P. Fund-cum-Pension-cum-Gratuity are available as per University rules in the case of Assistant Professor.

Persons already in employment should route their applications through proper channel.

Due consideration will be given to candidates belonging to Scheduled Caste/Scheduled Tribe at the level of Assistant Professor.

Second class (mail) rail fare (both ways) will be paid to candidates invited to appear for interview from outstation by the shortest route.

Applications separate for each post, on the prescribed form, obtainable free of cost from the Section Officer (Academic Branch-III) of the University by sending him a self-addressed and stamped envelope (affixing Postage stamps worth Rs. 2.85) of 23 cm × 10 cm. size should reach the Deputy Registrar (Academic) Jawaharlal Nehru University, New Mehrauli Road, New Delhi-110067, latest by **21.10.1980.**

Candidates from abroad, applying for the faculty positions, may apply on plain paper, (but their applications should reach the University by the last date) furnishing all the relevant informations such as their names, date and place of birth, marital status, nationality; state of domicile; postal and permanent addresses; father's name and address; academic and professional attainments; full details of (a) publications, and (b) research projects undertaken; language(s) known; details of visits to foreign countries; and the names and addresses of at least two persons well acquainted with the candidate's professional work who should also be requested by the candidate to forward to the Deputy Registrar (Academic) confidential report concerning the candidate

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SAMBALPUR UNIVERSITY

JYOTI VIHAR, BURLA

Advertisement No. 12678/Estt. II

9th September 1980

Applications in the prescribed form alongwith attested copies of marksheets and certificates of all examinations passed are invited for appointment to the post of Professor in Training and Placement in University College of Engineering, Burla.

I. Scales of pay Rs. 1500-60-1800-100 2000-125/2-2500/-

II. The post carries usual dearness allowances and C.P.F.-cum-Gratuity benefits as would be determined by the University from time to time.

III. Qualification

(a) Essential

(i) First Class Master's Degree/Doctorate degree in Civil/Mechanical/Electrical / Electronics Engineering.

(ii) Ten years experience in teaching in a University or a Engineering College or in research or in an industrial establishment out of which at least five years shall be in an industrial establishment.

(b) **Desirable**:—Experience in guiding research.

Seven copies of the application forms will be supplied from the University Office to each candidate in person on cash payment of Rs. 15/- (Rupees fifteen) only.

Candidates intending to receive forms by post are required to send (a) Crossed Postal Order of Rs. 15/- payable to the "FINANCE OFFICER", SAMBALPUR UNIVERSITY", (b) a self addressed envelope (23 cm x 10 cm) with postage stamps worth Rs. 3.30 affixed to it with the words "APPLICATION FORM FOR TEACHING POSTS IN SAMBALPUR UNIVERSITY" superscribed on it. Money Order/Cheque will not be accepted.

The last date for receipt of applications in the office of the University is **6.10.80**. The candidates will be required to appear for an interview before a Selection Committee at their own expense.

Issue of this advertisement does not make it binding on the University to make the appointment.

All communications should be addressed to the Registrar by designation only.

B.B. Tripathy
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY
KHARAGPUR

Advertisement No. R/4/80
18th September, 1980

Applications are invited for the undermentioned posts at the Indian Institute of Technology, Kharagpur, West Bengal:

I. Academic Posts

The qualifications, experience etc. required for Professors, Assistant Professors and Lecturers are given below:

(A) PROFESSORS

Scale of Pay

Rs. 1500 -60 -1800 -100 -2000 -125/2-2500/- plus D.A. as admissible.

Qualifications: Essential

(i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and a Doctorate degree.

(ii) Twelve years' experience in the field of specialisation prescribed, of which at least five years should be in teaching and/or research.

(iii) Published research work of good quality in journals of repute.

(iv) Experience in guiding research.

Desirable

(i) Experience of teaching post-graduate classes

(ii) Good design and/or industrial experience

N.B. : If a person is not found suitable for the post of Professor, he may be offered the post of Associate Professor, in the grade of Rs. 1500-2000/-

(B) ASSISTANT PROFESSORS

Scale of Pay

Rs. 1200-50-1300-60-1900/- plus D.A as admissible

Qualifications : Essential

(i) A good academic record with a Bachelor's or Master's degree in the appropriate branch and Doctorate degree.

(ii) Seven years' experience in the field of specialisation prescribed, of which at least two years should be in teaching and/or research.

Desirable

(i) Published research work of good standard.

(ii) Experience in guiding research.

(C) LECTURERS

Scale of Pay

Rs. 700-40-1100-50-1600/- plus D.A. as admissible

Qualifications : Essential

(i) A good academic record with a Master's degree in the appropriate branch.

(ii) Two years' professional experience.

Desirable

A doctorate degree.

(Some posts are reserved for SC/ST candidates)

In the event of non-availability of suitable SC/ST candidates, the reserved posts would be treated as unreserved.

NOTE: The following are applicable to Posts of Professors, Assistant Professors and Lecturers:

(a) In all cases experience means experience gained after obtaining the Master's degree.

(b) For the posts of Industrial Management Centre, Mining Engineering, Naval Architecture & Architecture & Regional Planning Depts, if suitable candidates with prescribed essential qualifications are not available then the minimum educational requirements may be relaxed.

(c) Relaxation of the minimum educational requirements may also be done in the case of candidates having outstanding research achievements or long and meritorious industrial/design experience.

Vacancies exist in the following disciplines and in the cadres noted against each. Applicants must clearly state the cadre and the discipline for which they are a candidate.

1. **Aeronautical Engineering** — Assistant Professors and Lecturers Specialisation in one or more of the following :
Aerodynamics/Aircraft Structures/Aircraft Propulsion.
2. **Agricultural Engineering** — Professors, Specialisation in one or more of the following:
Dairy & Food Engineering/Agricultural Engineering/Agricultural Sciences.
3. **Architecture & Regional Planning**— Professors, Assistant Professors and Lecturers,
Specialisation in one or more of the following: Architecture/Urban Design/City Planning/Visual Design.
4. **Chemistry** — Assistant Professors and Lecturers Specialisation in one or more of the following: Inorganic Chemistry/Organic Chemistry/Physical Chemistry with specialisation in High Polymer/Rubber Technology/High Pressure Chemistry.
5. **Chemical Engineering**—Professors Specilisation in one or more of the following:
Transport Phenomenon / Coal Process Engineering/Process Dynamics and Control / Chemical Plant Design/Unit Operation.
6. **Civil Engineering**—Professors, Assistant Professors and Lecturers Specialisation in one or more of the following:
Environmental Engineering/Water Resource Engineering / Structural Engineering/Highway and Traffic Engineering/Soil Mechanics & Foundation Engineering.
7. **Computer Science & Engineering**— Professors. Specialisation in one or more of the following:
System Hardware/System Software/Application Software/Microprocessor.
8. **Cryogenic Engineering**—Professors, Assistant Professors and Lecturers For Professors and Asst. Professor candidates with degrees in Mechanical or Chemical Engineering with experience of having worked in the field of Cryogenic Engineering are required. For Lecturers, candidates with a Physics background will also be considered.
9. **Electronics & Electrical Communication Engineering**—Professors, Assistant Professors and Lecturers Specialisation in one or more of the following:
Microprocessor / Microelectronics / Microwave Engineering / Communication Engineering/Control and Automation.
10. **Geology & Geophysics**—Professors and Assistant Professors
Specialisation in one or more of the following:
Exploration and Mining Geology/Structural Geology / Chemical Petrology and Geochemical Pros-

pective /Sedimentary Geology/Exploration Sysmology / Paleontology.

11. **Humanities & Special Sciences**—Professors and Lecturers Specialisation in English. For one of the posts of Lecturer the field of specialisation is French.

12. **Industrial Management**— Lecturers A basic degree in Engineering followed by a post-graduate degree in one or more of the following: Maintenance Engineering and Management / Industrial Management/Industrial Engineering and Operation Research.

13. **Material Science**—Professors, Assistant Professors and Lecturers. Specialisation in one or more of the following:
Metals and Alloys/High Polymer/Ceramics.

14. **Mathematics**—Assistant Professors and Lecturers.
Specialisation in one or more of the following:
Objective Geometry / Electricity/Functional Analysis/Statistics.

15. **Mechanical Engineering**—Lecturers Specialisation in one or more of the following:
Production Engineering / Machine Design / Hydraulic Machine/Mechanics of Solids.

16. **Metallurgical Engineering**—Lecturers Specialisation in Mechanical Metallurgy. Candidates with some industrial experience in shaping of Metals and/or Welding will be preferred.

17. **Mining Engineering**—Professors and Lecturers.
Specialisation in one or more of the following:
Coal Mining/Mining Machinery / Ventilation/Metal Mining.

18. **Physics**—Assistant Professor.
Specialisation in one or more of the following:
Solid State Physics / X-rays and Structure of Matter.

19. **Post Harvest Technology**—Professor, Assistant Professor and Lecturer. Specialisation in one or more of the following:
Market Economy / Rice Technology/Crop Process Engineering.

20. **Radar Communication** — Assistant Professor and Lecturer.
Degree in Electronics or Electrical Communication Engineering.
Specialisation in one or more of the following:
Fibre Optics / Digital Communications/Microwave.

21. **Rural Development**—Assistant Professor and Lecturer.
Specialisation in one or more of the following:
Rural Industrialisation / Technology and Energy Sources relevant to Rural Area/Urban-Rural and Industry—Agricultural Relationship / Agricultural Land Use and Water Management.
Candidates with experience in the actual implementation and evaluation of the rural development projects will be given preference.

II. Professor (Training & Placement)

Scale of Pay

Rs. 1500-60-1800-100-2000-125/2-2500/- plus D.A. as admissible.

Qualifications : Essential

(i) A good academic record with a Bachelor's or Master's degree in any branch of Engineering or technology and a Doctorate Degree.
(ii) 12 years experience of which at least 5 years should be in teaching and/or research.

Desirable

(i) Published research work of good quality in Journals of repute.
(ii) Experience in training & placement work.

Note: Relaxation of the educational qualifications may be done in the case of candidates having long industrial experience.

Job Requirements

The candidate will be required to be in-charge of the training and placement activities of the Institute. In addition he will be required to assist the Dean of Sponsored Research and Consultancy in the work of the Industrial Consultancy Centre of the Institute.

III. Assistant Professor (Liaison Officer Industrial Consultancy)

Scale of Pay

Rs. 1200-50-1300-60-1900/- plus D.A. as admissible.

Age

Preferably between 30 and 45 years.

Qualifications

The qualifications for this post are as stated above for the post of Assistant Professor with a degree in any branch of Engineering and Technology.

Job Requirement

The person recruited shall be required to assist the Dean of Sponsored Research & Consultancy in organising the Industrial Consultancy Centre of the Institute. He will also be the Liaison Officer between the industries of the region and the Institute with a view to promoting consulting activities.

Note: If the candidate is considered otherwise suitable, Ph.D. would not be a required qualification. The number of years of experience may be reduced if the candidate has a Ph.D. degree and is otherwise suitable.

IV. Computer Centre

(A) ENGINEERS (Shift)—2 posts
(One reserved for S/C candidates)

Scale of Pay

Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Qualifications: Essential

B. Tech (or equivalent) in Electronics/Electrical Engineering with mechanical aptitude or B. Tech (or equivalent) in Mechanical Engineering with Electronics/Electrical engineering aptitude, and 2 years experience in maintaining computers and peripheral equipments.

OR

M. Tech (or equivalent) in Electronics/Computer Science.

Desirable

Demonstrated accomplishment in completing hardware project and experience in maintenance of a third generation system.

(B) OPERATION MANAGER—1 post

Scale of Pay

Rs. 1100-50-1600/- plus D.A. as admissible.

Qualifications: Essential

(i) B. Tech./B.E./M.Sc. degree
(ii) Demonstrated supervisory ability of managing a team of at least ten technical people.
(iii) Eight years experience in the operation of Computers, either in programming or maintenance.

Desirable

Experience with a third generation computer system.

V. ENGINEER

(Audio Visual Cell)—(1 Post)

Scale of Pay

Rs. 700-40-1100-50-1300/- plus D.A. as admissible

Qualifications: Essential

(i) Bachelor's Degree in Electronics & Electrical Communication Engineer or equivalent.
(ii) At least 5 year's experience in repair, design, fabrication, development and production of Audio visual equipment and entertainment electronic.

Desirable

Experience in supervising and repairing sophisticated equipment related to Audio Visual Unit.

VI. SENIOR ENGINEER

(Institute Press)—(1 post).

Scale of Pay

Rs. 1100-50-1600/- plus D.A. as admissible.

Qualifications

Essential

(i) A good degree/diploma in Printing Technology from a Institute of repute.
(ii) A minimum of 10 years experience in a reputable printing press of which at pleast 3 years should be in a managerial capacity.
(iii) A detailed knowledge of both letter-press and offset printing processes.

Desirable

(i) Experience in having work with Russian and English monotype machine and Russian Off set machine.
(ii) Practical knowledge of repairing and maintenance of printing machinery.

VII. ASSISTANT ENGINEER

(Mechanical)—(1 post)

Scale of Pay

Rs. 650-30-740-35-810-EB-880-40-1000-EB-40-1200/-
Plus D.A. as admissible.

Qualifications : Essential

(i) A graduate in Mechanical Engineering or equivalent.
(ii) A minimum of 3 years experience in the maintenance and operation of refrigeration and air-conditioning plants, room air-conditioners and water coolers.

Desirable

Experience of maintenance and servicing of petrol and diesel driven vehicles.

NOTE: Those who applied against Advertisement No. R/10/79 and R/2/80 need not apply again.

VIII. ASSISTANT ENGINEER

(Sanitation)—(1 post)

(The post is reserved for ST candidates. General candidaes are also eligible to apply. The general candidates will be considered if no suitable ST candidates are available for appointment to the vacancy).

Scale of Pay

Rs. 650-30-740-35 - 810 - EB- 35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Qualifications : Essential

A graduate in Public Health Engineering or Civil Engineering with about 3 years or relevant experience in the field of sanitation.

OR

A three-year diploma in Public Health Engineering or Civil Engineering with about 7 years relevant experience in the field of sanitation.

Job Requirements

(i) Able to prepare estimates, design and supervise Civil construction works in sanitary works and water works and able to organise and supervise municipal services like sewage systems, garbage clearance, water systems, mosquito control, road maintenance and horticultural works etc.

(ii) Able to handle sanitation and the horticultural (Malis and sweepers) staff and organise municipal services, including handling and maintenance of stores.

(iii) Any other works as may be assigned by his superior in-charge or the Director.

IX. ASSISTANT ENGINEER

(CIVIL)—(One post)

Scale of Pay

Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200/- plus D.A. as admissible.

Qualifications : Essential

Graduate in Civil Engineering with a minimum experience of 3 years or diploma holder in Civil Engineering with a minimum experience of 8 years of which at least 5 years experience in Construction, Maintenance and Civil works of public health Engineering.

X. SENIOR PHYSICAL TRAINING INSTRUCTOR (One post)

Post is reserved for Scheduled Caste/ Scheduled Tribe candidates.

Scale of Pay

Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Qualifications : Essential

(i) Master's degree in Physical Education (two year course) or a Master's degree in Arts/Science with a Diploma in Physical Education from a recognised university. A minimum of 7 years' experience at University level in handling sports, games and cultural, activities is essential.

OR

A Bachelor's degree in Physical Education or a Bachelor's degree in Arts/Science with a Diploma in Physical Education from a recognised University. A minimum of 10 years' experience at University level in handling sports, games and cultural activities is essential.

(ii) Organisational and administrative ability with a working knowledge in accounts, preparation and maintenance of courts and playgrounds.

(iii) Proficiency in sports and games

Desirable

Diploma/Certificate in Yoga instructions from any recognised Institute.

XI. ASSISTANT REGISTRAR

(1 post) Reserved for S/C candidates.

Scale of Pay

Rs. 700-40-900-EB-40-1100-50-1300/- plus D.A. as admissible.

Qualifications : Essential

(i) Good degree in Arts, Science, Commerce or Business Management.

(ii) Must have good knowledge of procedure of general administration or accounting of Cash and other transaction, preferably both, and be able to draft, reports and minutes of conferences.

(iii) At least 10 years' experience in a responsible position under Govt. or in a large Educational Institution or business organisation of repute.

Desirable

Experience of supervision of recruitment work, meeting and conference work, examination work, students' welfare work and proved capacity to understand students and their problems.

XII. ASSISTANT LIBRARIAN

(1 post)

Scale of Pay

Rs. 700-40-900-EB-1100-50-1300/- Plus D.A. as admissible.

Qualification : Essential

First or Second Class B.A./B.Sc./ B.Com. Degree plus a First or Second Class M.Lib. Sc. Degree.

OR

First or Second Class M.A./M.Sc./ M.Com. Degree and a First or Second Class B.Lib.Sc. or a Diploma in Library Science.

Desirable

Experience of having worked in a large reputable library.

XIII. COORDINATOR (TRAINING)

N.S.S. Unit—(1 post)

Scale of Pay

Rs. 1100-50-1600/- plus D.A. as admissible.

Qualifications : Essential

(i) Bachelor's degree in Engineering or a good Master's degree in Science or Humanities.

(ii) Field experience in Rural Development Work.

(iii) Experience in organising campus Seminars, training courses etc.

Desirable

Experience in printing and production or various types of booklets, brochures etc.

Job Requirements

To plan and organise various training activities, refresher courses, seminars, printing of booklets and bulletins and other NSS programme activities of the Institute.

Application form may be had from the Registrar on request along with an unstamped self-addressed envelope of size 23 cm. x 10 cm. Application accompanied with an application fee (non refundable) of Rs. 7.50 (Rs. 1.87 for SC/ST candidates) payable by means of crossed Indian Postal Order to Indian Institute of Technology, Kharagpur at Kharagpur-721 302 Post Office would reach the Registrar, IIT, Kharagpur-721 302 (West Bengal), by the **27 October, 1980**.

Applicants who are in the employment of Government/Semi-Government Organisations or of any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

AGRA UNIVERSITY

AGRA

Applications are invited for a permanent post of Lecturer in French for K.M. Institute of Hindi Studies and Linguistics, Agra University, Agra, in the grade of Rs. 700-40-1100-50-1600 plus allowances as per University rules. Applications on prescribed form must reach the undersigned *by name* latest by **October 24, 1980**. The applicants must specifically mention on the prescribed form as well as on the envelope, the post applied for. Form can be had from Assistant Registrar (Publications), Agra University, Agra on payment of Rs 5/- either in cash at the University counter or through Money Order for Rs. 8/-.

Qualifications

1. A doctorate in the subject concerned or a published work of high standard in that subject.

2. (a) Consistently good academic record that is to say the candidate should have obtained at least 50% marks in Higher Secondary (12 years course)/ Intermediate and first degree examination separately or a minimum average of 55% marks in the two examinations taken together.

(b) First or high second class that is to say more than 54% marks in Master's Degree in French or an equivalent degree of a foreign University in such subject.

3. Preference shall be given to those who also have Diploma /Certificate in German.

4. Where the Selection Committee is of the opinion that the Research work of a candidate, as evidenced either by his thesis or by published work, is of a very high standard, it may relax any of the requirements specified in clause 2(a) and (b).

5. If a candidate possessing a qualification prescribed in clause (1) is not available or is not considered suitable, a person possessing a consistently good

academic record (due weightage being given to M.Phil or equivalent degree or research work of quality) may be appointed on the condition that he/she will attain the prescribed qualification (namely doctorate or published work as aforesaid) within five years from the date of his/her appointment;

Provided that where the teacher so appointed fails to attain the prescribed qualification within the said period of five years, he/she shall not be entitled to yearly increments after such period, until he/she attains such qualification.

S.B.B.B. Singh
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY
KANPUR

Advertisement No. 25/80

Applications are invited for one post of Senior Scientific Officer II in Central NMR Facility in the Department of Chemistry in the following pay scale:

Rs. 700-40-900- EB -40-1100-50-1300

Qualifications

Candidates must have at least B.E./ B.Tech. degree in Electrical Engineering with specialization in Electronics.

Preference will be given to candidates with experience in the maintenance and operation of FT-NMR spectrometer systems and also familiar with electronics and computer hardware and software associated with NMR systems.

The post is contractual for a period of three years initially, extendable by a further three years at the end of which the candidate is eligible for consideration to a permanent post, and carry benefits in the shape of CPF Scheme. Besides pay, the post carries allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

Applications from persons in India should be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm x 10 cm size. Applications should be accompanied by a postal order of Rs. 7.50 (Re. 1.87 for SC/ST candidates).

Persons from abroad may apply on plain paper along with a complete biodata and names of three referees from whom reference letters may be obtained.

Applicants who are employed in a Government/Semi Government organisation or Institute, should send their applications through proper channel, else they will be required to produce a 'NO OBJECTION CERTIFICATE' from their employers at the time of interview.

Applications should reach the Registrar, Indian Institute of Technology, IIT Post Office, Kanpur-208016 (U.P.), India on or before **October 25, 1980.**

MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE RESEARCH INSTITUTE
LAW COLLEGE ROAD
PUNE-411 004.

Applications are invited for admission of research scholars for Ph.D. degree of University of Poona in the following disciplines:

1. Botany (Mycology & Plant Pathology; Systematic Botany, and Ethnobotany; Plant Genetics)
2. Biometry and Statistics.
3. Chemistry (Organic, Physical and Biochemistry)
4. Geology and Palaeontology (Invertebrate Palaeontology, Stratigraphy)
5. Microbiology (including Agricultural Microbiology)
6. Zoology (Genetics and Cytogenetics; Entomology).

Candidates must possess *at least* a high second class M.Sc. degree in the respective disciplines and will be eligible for application for research scholarships (UGC, CSIR, MACS etc.)

Blank application forms with prescribed conditions can be had from Registrar, M.A.C.S. personally or on sending a Postal Order/M.O. for Re. 1/- drawn in favour of the Registrar, M.A.C.S., Pune 4 and a self-addressed envelope (size 9"x12") bearing stamps for 0.50 P.

Last date for receiving completed applications is **31st October, 1980.**

UNIVERSITY OF DELHI

Advertisement No. Estab. IV/66/80 **Dated September 23, 1980**

Applications on the prescribed form are invited for the following posts:

Department	Designation
Economics	(i) *Four Professorships (One in Mathematical Economics) (ii) Research Associates
English	Three Readerships
Botany	(i) *Three Readerships (ii) Garden Coolie (One) (Reserved for Scheduled Caste)
Sanskrit (South Campus)	One Readership
Hindi	One Readership (Specialization: Drama & Stage Craft)
Campus Law Centre (Faculty of Law)	One Readership
Faculty of Science	*One Reader in History of Science and Scientific Methods
Modern Indian Languages	One Lecturership in Gujarati
Chinese & Japanese Studies	One Lecturership in Chinese Language
W.U.S. Health Centre	(i) One Medical Officer (Male) (ii) Seven Part-time Medical Officers (iii) One Nurse (Reserved for Scheduled Caste)
D.U. Computer Centre	One Key Punch Operator (Reserved for Ex-Serviceman) Note: General candidates would also be eligible to apply. The General Candidates would, however, be considered only if no suitable Ex-Serviceman candidate is available for appointment to this post.
Chemistry	Two Technical Assistants (Temp. but likely to continue) (One each reserved for Scheduled Caste and Ex-serviceman) Note: General Candidates would also be eligible to apply. The General candidates would, however, be considered only if no suitable Scheduled Caste/Ex-serviceman candidates are available for appointment to the vacancies reserved for them.
Anthropology	One Senior Laboratory Assistant (Temp. but likely to continue)

Note: *Indicates that the posts are being readvertised. Those who have applied in response to the earlier advertisements (Nos. 58, 59 and 61) for these posts need not apply again, but in case they have any additional information to supply, they may do so.

The scales of the pay of the posts are:
Professor: Rs. 1500-60-1800-100-2000-125/2-2500
Reader: Rs 1200-50-1300-60-1900
Lecturer: Rs. 700-40-1100-50-1600
Research Associate: Consolidated monthly emoluments as under:
A—Rs. 1,000/- p.m. (Fixed)
B—Rs. 1,200/- p.m. (Fixed)
C—Rs. 1,400/- p.m. (Fixed)

On the recommendation of the Selection Committee.

Medical Officer: Rs. 700-40-900-EB-

40-1100-50-1300, plus non-practicing allowance as admissible under the University Rules.

art-time Medical Officer: Rs. 500/- p.m. fixed

(Duty Hours : 3 hours daily)

urse: Rs. 425-15-560-EB-20-640

ech. Assistant: Rs. 425-15-500-EB-15-560-20-700

ey Punch Operator: Rs. 260-6-290-EB-6-326-8-366-EB-8-390-10-400

(plus Rs. 20/- as special pay)

enior Laboratory Assistant: Rs. 380-12-500-EB-15-560

arden Coolie: Rs. 196-5-220-EB-232

All posts, except that of Research Associate and Part-time Medical Officer arry D.A., C.C.A. and H.R.A. as dmissible under the rules in force in the University from time to time.

ESSENTIAL QUALIFICATIONS FOR

Professorships

A Scholar of eminence.

Independent published work of high standard and experience of teaching Post-graduate Classes and guiding Research for a considerable period desirable.

Readerships

Good academic record with first or high second class Master's Degree in the subject concerned with a Doctor's Degree or equivalent published work.

Independent published work (in addition to the published work mentioned above) with atleast 5 years' teaching experience in Honours/Post-graduate classes essential.

Lectureship (other than Chinese Language)

Essential

Good academic record with a first or high second class Master's Degree or an equivalent degree of a foreign University in the subject concerned.

Note: (Second class would mean atleast 50% marks in the subject or equivalent grade).

Desirable

(i) A Doctor's Degree or Evidence of Research work of equivalent standard in the subject concerned. (ii) Teaching experience of Degree/Post-graduate classes.

Provided if a teacher is not a Ph.D./M.Phil./M.Litt. at the time of his/her appointment and does not qualify himself/herself for the award of Ph.D./M. Phil./M. Litt. degree from a recognised University in a subject which is being taught by him/her within a period of five years from the date of his/her appointment or does not give evidence of research work within that period in the subject concerned, he/she shall not be entitled to any future increments after the expiry of the said period of five years till such time he/she fulfils the above mentioned requirements.

Lecturer in Chinese Language

(a) Good academic record with first or high second class Master's Degree or an equivalent degree of a foreign University in the subject concerned.

(Note; Second class would mean at least 50% marks in the subject or equivalent grade).

OR

(b) A graduate with three years' Diploma or its equivalent in the Language, followed by:
1. Two years' training in the concerned Language area: or
2. Three years' Language work outside the Language area.

OR

(c) A graduate with two years of Language training in the concerned Language area, followed by
1. Two years of Language work outside the Language area: or
2. One year of Language work in the concerned language area (i.e. 3 years altogether in the area).

Research Associateship

Consistently good academic record with first or high second class (B+) Master's Degree or an equivalent degree of a foreign University in the subject concerned.

Note: Initial appointment will be for a tenure period of three years extendable by another two years only. **In no case the tenure will extend beyond 5 years in all.**

Medical Officer

M.B.B.S. degree from a recognised University—minimum experience of 3 years after completion of internship required. Candidates with post-graduate qualifications or hospital experience will be preferred.

Part-time Medical Officer

M.B.B.S. degree with at least 3 years' experience after internship.

Nurse

Diploma in General Nursing and Midwifery from recognised University or Institution and registered as 'A' Grade Nurse.

Technical Assistant

Graduate in Science. Experience in Laboratory Techniques of the subject.

Senior Laboratory Assistant

1. Higher Secondary or equivalent Examination with Science subjects.
2. 5 years experience as Junior Lab. Assistant in an Anthropological Laboratory.

Key Punch Operator

Higher Secondary / Matriculation. Experience in operating a Electric Key Punching Machine (Numerical & Alphanumerical) and knowledge of handling Computer Input/Output work.

Garden Coolie

Conversant in Gardening methods.

SPECIAL / DESIRABLE QUALIFICATIONS FOR

Professorship in Mathematical Economics

Mathematical Treatment of Economic Theories.

Professorships in Economics

(a) **For first post: Area Studies.** The Professor appointed in this post, in addition to his normal duties in the department will be expected to supervise research work in Area Studies (Pakistan and/or Bangladesh Economy).

(b) **For second post**: Preference will be given to a scholar who has specialization in Economic Theory, International Economics or Monetary Economics.

Readership in Botany (for 2 posts)

Training & experience of research in interdisciplinary areas.

Readership in Sanskrit: (South Delhi Campus)

(i) Grammar & Linguistics, (ii) Prakrit & Jainism, (iii) Veda and (iv) Dharmasastra.

Lecutreship in Gujarati

(i) Specialisation in Modern Gujarati Literature,

(ii) Desirable:

(a) A good knowledge of Sanskrit/Linguistics/Hindi/English.

(b) Should have experience of teaching at B.A. (Hons.) level at least for 5 years.

Part-time Medical Officer

Desirable

(a) Experience of working in a hospital after graduation.

(b) Post-graduate qualifications.

Nurse

2 years' experience of ward-duty in General Hospital.

Garden Coolie

Experience of looking after plants grown for research and teaching purpose.

The prescribed application form can be had from the Information Section of the University either personally or by sending a self addressed envelope (size 13 cm x 28 cm.) with postage stamps worth Rs. 2.90.

The candidates will have to produce the original documents relating to their age, qualification, experience, etc. at the time of interview.

Applications **(separate for each post)** accompanied by attested copies of Degrees, other certificates, marksheets published research articles, etc., should reach the undersigned not later than **25th October, 1980**.

Note:

1. It will be open to the University to consider the names of suitable candidates for teaching posts who may not have applied. Relaxation of any of the qualifications may be made in exceptional cases, in respect of all teaching posts on the recommendation of the Selection Committee.
2. Canvassing in any form by or on behalf of the candidates will disqualify.
3. Candidates from outside Delhi, for teaching posts only, called for interview will be paid to and fro single second class rail fare.
4. The University reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant.

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University News

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N.B.

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(v) For Reader in Chemistry

Specialisation in any brach of Organic/Inorganic Chemistry.

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M.L. Tiwari
ACTING REGISTRAR

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R.N. Jha
REGISTRAR

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Editor : ANJNI KUMAR

27 OCT 1980

Discipline and Authority in Higher Education

K.R. Ramachandran Nair*

Higher education is in shambles to-day. This is not so much from lack of money or effort as from a general lack of discipline and authority in our campuses. Education, especially at the higher levels, is a formal, structured and tightly institutionalised enterprise designed to raise the student above the level of the merely literate and the informed. Its aim is to produce men and women of excellence who can be entrusted with the task of building a better nation.

To-day there are about 120 universities, more than 1700 colleges, 1.75 lakhs of teachers and about 40 lakhs of students involved in higher education. This massive and nation wide phenomenon has almost become a threat to peaceful national life and has already ceased to be an agency pursuing, imparting and expanding knowledge as it ought to be.

The malaise in higher education is due to two reasons—indiscipline and apathy on the part of the students and teachers and the absence of rational exercise of authority on the part of the administrators. Higher education involves planning of serious learning and an orderly initiation into an intellectual and moral inheritance. This engagement to learn through a systematic and orderly participation in the process of learning is possible only when there is a competent environment almost monastic in purity and quality and conducive to a cooperative encounter between the student and the teacher. Such an atmosphere does not exist in our higher educational institutions to-day. Worse still, there has been no national realisation of the seriousness of the malaise nor any attempt to retrieve the situation except some sporadic expression of bravado on the part of the educational authorities here and there.

The decline of discipline is a universal feature. Defiance of authority and picking up new loyalties are the inevitable outcome of the growth of science, social sciences and the new mores of morality. Implicit trust in the authority and wisdom of the parent, the teacher or the priest has given place to a belief that opposition to all sources and concepts that demand discipline is meritorious. Historically, evolution of indiscipline among the young and the educated is closely related to the growth of the idea of freedom as liberation from all sorts of constraints. As a result, identification of freedom with physical movement not guided by the intellect has converted the centres of learning into centres of disorder.

The very concept of discipline in educational institutions is to be reviewed in the background of the historical situation in which we are placed. The traditional impatience of the grown up with the

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Prof. of English, Tagore Arts College, Pondicherry.

non-chalance the youth exhibits in its life style serves on purpose.

Discipline is educative order. It should be treated as an educational objective not as a mere facilitator of education in the campus as often treated by the teachers and administrators. The essence of discipline on the part of the student is his capacity to transfer the self control externally exercised on him by the parents and teachers in his childhood into his internal consciousness so that he may exercise the moral autonomy of self control without any external aid or compulsion. Thus it is clear that sense of discipline is the concomitant of what is learnt and taught in the class room and at home. So any constraints put on the students that do not contribute to further learning do not necessarily contribute to genuine discipline. That is why the traditional methods of exhortation, threat, punishment and reward have thoroughly failed in creating or retaining discipline in our campuses. The remedy lies in making discipline coincident to instruction and not a precedent to it.

Punishment does not create or preserve discipline unless it is educative in nature. Student indiscipline cannot be equated with criminality and whenever it results in criminality the responsibility lies equally with the educational authorities. Usually the authorities err at two extremes in an indiscipline situation —either they are too soft and slow or too harsh and ruthless in their response depending on the type of political support the students are likely to get. In any case punishment meted out are annulled by subsequent pressures and the cause of discontent survives without being neutralised or even channelised.

A proper and effective handling of an indiscipline situation in the campus is possible only when there is the felt presence of authority. A college or university is a compact experiment in rule-governed activities. The function of a campus authority as represented by the educational authorities like the Principal or the Vice-Chancellor is not just to punish the recalcitrant and to coerce the innocent into a forced conformity but to provide clarity and harmony to the ruled-governed activities so as to ensure that learning takes place. The administrator should aim at some optimal conditions for academic functioning but he should restrain his impulse to extend his sway beyond as in prescribing dress regulations for the students or instructing what books they should read outside the syllabus.

In higher education the Principal or the Vice-Chancellor is the symbol of authority. To make the academic authority acceptable to the students, teachers and the public, it should satisfy at least four conditions.

(a) The nature and scope of authority must be well defined in terms of rules and regulations in conformity with democratic principles.

(b) The administrator should carry the mantle of authority with dignity and humanity without distorting it to serve his personal or group interests.

(c) The legitimacy and rationality of the authority system should have been established through a process involving those who are affected by its decision making like the students, teachers and the public in its day-to-day functioning.

(d) The administrator who wields authority should have an admirable image based on his personal history, credentials, achievements and academic wisdom.

It is a mistake to conceive of authority as force or power as several administrators tend to do. Authority is the way in which behaviour is regulated and conformity among various elements is obtained without recourse to force or power. To use force or power is to get others conform by threats, punishments, propaganda and other non-rational means. It may be conceded that the ability to exercise power is a necessary condition for the effective exercise of authority especially in troubled situations but the credibility and sanctity of authority depend on its capacity to resist the temptations to use force.

For the effective functioning of an authority system, it is to be rationalised in its structure and modus operandi. The authority system must be clearly related to the purpose and structure of the institution concerned. So one should decide what are the distinctive purposes of an institution before deciding what authority system the institution should have. Thus the type of authority system and its ramifications suitable for an Arts and Science college may not be suitable for a technological institution or a mountaineering school.

The most important function of authority is to make decisions concerning academic and social life in the campus. It is the decisions that are made or not made that cause campus disquiet. Decision making invariably should lead to their implementation. This requires issuing orders and instructions at various levels and facilitating the functioning of the various persons and agencies working as subordinate authorities without giving an impression of contradiction in policy matters and harrassment in the realisation of goals. Decisions are accepted and orders are obeyed only in proportion to the inner certitude born out of the sterling qualities of the man of authority and in proportion to his earlier success on similar occasions.

An academic is paternalistic in his concept of authority. Academics including the administrators at the college and university level often proceed on the basis of unexamined traditions and unscientific hunches about the benefit of educational planning in courses, examinations, assessment, tutorials, extra-curricular activities etc. The academics resent questioning them on the wisdom of their ideas especially if the questioning comes from the students of the laymen. So it is advisable to involve students, teachers and the public in the process of formalising educational programmes. A university or a college is part of a wider community that finances it and so its policy and development are not merely the

(*Continued on page 569*)

TO BE OR NOT TO BE

B.M.K. Sinha

A university is a highly specialised centre of study dealing with the problems of humanity as a whole, of enquiry into the mechanism of Nature and of struggle with the mystery of Life and Death. Autonomy and absolute Autonomy was not a privilege to such a body was just like want only. To take away the Right of Self-determination from such a body was just like want only clipping the wings of a bird and leaving it inert.

It may be argued that the universities went wrong and the government, as government, had to step in. But the stepping in made the universities worse, even as Sugar Mills or other trading mills, become more sick after they have been taken over by the Govt. on their being reported as sick. In the universities, teachers ceased to function as teachers and adopted political courses on the basis of conveniences provided to them in this regard. Students were initiated into politics and their bodies were recognised as political units with a right to form their own Unions. The Senate and the Syndicate, the two important academic bodies were rigged with raw politicians: and the worst feature was that the university was obliged under the Act to take orders from the government, for their smallest and biggest needs. And the government means what? Not merely the Ministers. But also the Higher and the Lower levels of workers in the Secretariat. It became a matter of joke at the Secretariat tables that if V.Cs' and Principals and Registrars could wait at the door with their files, why not others!

Under pressure of politics, and a secular way of administration devoid of all religious and reverential feeling the moral force and the intellectual urge which formed the life—breath of an educational institution disappeared. The influence of scholars gave way to that of stingy Executives. Students learnt to take the law into their own hands and defy their teachers educational and their leaders political. The criminals in the garb of students took asylum in these institutions, even as the criminals sometimes did in monastries in the Middle Ages resulting in a tug of war between the two opposite camps. The same is happening today—the police sending a list of criminal students to the universities and the universities passing the list on to the Principals for investigation thus the baby goes on exchanging hands.

But why should the police be made to intervene in the affairs of the university at all ? The police in a university campus is an anomaly. Perhaps the queer slogans such as cheating is our birth right, Gaddi Chhoro, Murdabad and wild manifestations of behaviour, such as Dharna, Gherao, Lock-up, Fast Unto Death and various forms of reckless damaging of property necessitated the drafting of the police. When the police went into action, there were agitations on the streets and in the Legislature bodies accusing the police of inhuman action in resorting to firing and bringing about deaths. Thus the university authorities and the police, both, came in for severe condemnation at the hands of the public. It has not been realised that the police and the students are naturally inimical to each other even as Cat and Mouse are. Fraternising attempts were made by the Britishers but the attempts failed. The feeling of common Nationality and common purpose was expected to bring about the desired result. But this also failed. Therefore, to put students and the police in confrontation is to invite the doomsday earlier than it is due. Educationists to fight with the help of the police whatsoever the cause. Teaching, Examinations or even security, is simply to stir up a hornets' nest. A police bivouac at a university campus gives the institution the look of a huge Detention Camp and takes away all the sanctity of the place, sets at naught the Teachers' personality and rubs the spirit of the youth in a wrong way. A police guard at the V.C's lodge or a police escort for teachers or students for the sake of safety is the most depressing sight to be seen by passer-by. The police action which is a reflex of political adoption of a university retards the effect of whatsoever good intentions there might have been behind these manoeuvres.

True, they have sold away the grain of gold as tinsel. The real situation is revealed, if only you care to read the writings on the walls, inside and outside of the university buildings. A better documented proof of their utter ruin is not needed.

When the post of V.C is offered to anybody now, it is not everybody who jumps at the offer. Some reflect. The post still has some attraction. The memory of a V.C in the past is still lingering somewhere at the back of the mind. In the beginning the great High Court judges, both English and Indian, used to adorn this seat of learning. Practically no work at the university—the little that was done by the Registrar. A little later the sons of noble families of the State occupied this seat. They did handle some amount of work, but they were not bothered or pestered with it. They took it easy. The Senate and the Syndicate, were, more or less, like cultured sophisticated clubs, where some problems could be decently discussed and amicably settled. These V.Cs had nothing to do directly with students. The students' highest approach was the Principal of a college. Only a few teachers who were members of academic bodies could have direct access to the V.Cs. The Vice-Chancellors' position being the Head of a university, was very high and in the whole State, at first, there was only one, and later two V.Cs. This enhanced their value. The Chancellor, the highest body in the State, had more or less a legendary existence. The memory of such a high-placed Vice-Chancellor naturally lies hard.

But the present situation has a contrary effect. The V.C today, is not socially as high as of old, since the degradation of a university in the public eye has devalued the position of a V.C. Then to function as

(*Continued on page 570*)

On University Public Relations

R. K. Kaushal*

An institution of higher learning, if it has to function smoothly in a democratic set-up, has to realise the importance of maintaining good public relations. No effort is to be spared for creating an atmosphere of sympathetic understanding at its campus.

Public relations motivates you to see things in a particular perspective. A Public Relations Officer would refrain from suppressing facts. He cannot afford to lose his credibility. He may, however, present facts in an acceptable manner.

He has to boost up the image of the client institution. But image would depend upon the characteristics of the model. Only an ideal model, can expect an ideal image. Let it be emphasised, therefore, that public relations is not a substitute for performance.

If an institution claims to be just and fair to its publics, it has to be fair to its Public Relations Officer as well. You have to convince your public Relations Officer, at the first instance, that you really have good intentions, to enable him to propagate this fact effectively. There has to be, therefore, an effective co-ordination among the offices of the Registrar, the Dean of Studies, the Dean of Student's Welfare and the Public Relations Officer in the interest of the University.

No institution can escape the duty of being fair and just to its public under any pretext whatsoever. And justice is not only to be done, it should also appear to have been done. Negotiations, motivation and persuasion can surely be applied more profitably to get programmes, policies and orders implemented. Communication-gap results in lack of understanding and distrust. Dissemination of proper information has to be effectively channelised therefore. Respect for democratic values is a must. Bureaucratic approach has outlined its utility. A Public Relations Officer can help you if you keep no secrets from him and all important information is passed on to him in time. He has to be kept in confidence always.

Press liaison; liaison with government agencies: collecting, compiling and editing information received from various sources; bringing out university journals, pamphlets, folders, hand-outs and other press releases; press coverage of seminars, summer schools, speeches, functions, meetings and tournaments; reception of V.I.Ps and study teams; advertisements; exhibitions; proper analysis of situation during crisis; co-ordination with general administration and teaching departments; briefing the Vice-Chancellor on major developments and various problems agitating the minds of university community on various issues are some of the major functions of a university Public Relations Officer. Besides, he has to work as a ghost writer also.

The nature of duties of Information/Public Relations officer, therefore, calls for imagination, contemplation and use of certain techniques and facts which he acquires after a lot of experience. It is, therefore, a time consuming and a whole time job. In fact a Public Relations Officer starts functioning the moment a person meets him whether on a road-side, in his office or at his residence.

An efficient functioning of the Public Relations Cell depends upon the working facilities it is provided with. The first and foremost requirement for efficient functioning is that you have a contented staff.

Universities which understand the concept of public relations are, therefore, liberal enough in providing some such physical facilities to their Public Relations Officer, which are generally not allowed to other officers of his equivalent status. A well furnished office room which can give a presentable look to the outsiders, a direct telephone at his office, some arrangement for providing tea/coffee to important visitors as a matter of courtesy, a vehicle and a well furnished residence near the campus are some of the minimum facilities which an organisation can give to its Public Relations Officer. No one should grudge if these facilities are provided to the Public Relations Officer in public interest. No one should grudge if the telephone bill of a Public Relations Officer is slightly higher than that of other officers.

No efforts have to be spared to keep the scholars. the researchers and the teachers busy in research projects, studies, sports and other co-curricular activities. With an imaginative plan, the campus is to be kept humming with such activities so that the Public Relations Officer gets a chance to publicise the achievements of the students and teachers. Every facility has to be provided to the teachers concerned who are associated with organizing such programmes. It would be in fitness of things if the heads of other institutions and the elite in the town also gets a chance to attend and participate in the university programmes.

Unionism has entered campuses. Teachers also have got into its grip. There should be no reason to feel sorry about it. It has to be accepted. And it has to be accepted with all the humility and respect. It has to be made meaningful. Unionism in the universities should get new dimensions, a new direction. Let it inspire dynamism in academic circles. Let it be directed towards peace, putity and perfection.

Blaming others does not help. A self-introspection during a crisis is most advisable. This applies to the authorities as also to the publics concerned.

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*PRO, Himachal Pradesh University.

nd they have not to strain much. They have simply o think aloud in presence of their Public Relations fficer to find out the cause and the way out of the risis. It has to be an honest introspection. Bold onfession gives you courage. Concealing facts or wisting facts weakens you all the more.

The aggrieved parties are expected to exhaust the hannel of peaceful negotiations and discussions with an open mind to understand what the authorities have to say. Decency is the way of the educated. Perseverance has to be tried before you resort to a direct action.

The students, the teachers and the employees cannot for a moment forget that in fact they make what is called a university. They are part and parcel of the organisation. They have to feel responsible for its well-being. Ultimately it is their performance which brings a good or bad name to the university. They will also do well if they take the Public Relations Officer in confidence as soon as they feel aggrieved and think aloud with him to find a way out to get it redressed.

All the sections of the university have to beware of their exploitation by politicians and other vested interests. They have to identify themselves with the institution and the authorities have to recognise this approach of theirs.

Public Relations is not only the function of a single functionary known as Public Relations Officer. It is in fact an attitude of life and it has to be developed by every educated and respected person who is associated with an institution of public welfare like a university. We have to be polite and sincere in our dealings with others. We have to be vigilant, we have to be aware, we must have control upon our utterances for a loose utterance may sometime result in a serious problem.

Evaluation of a PR programme is complex and its measurement does not always offer a mathematical answer. A Public Relations Officer has to function as an impartial, respectable and responsible person interested in the welfare of the management as well as the publics concerned. He can be most effective, but only if his integrity is not doubted. If you expect him to look after your interests, you must fulfil his expectations also. And his only expectation is that you confide in him. Surely you cannot have a friend better than him. He may not be perfect, no one is. His sincerity will pay dividends. ☐

Discipline and Authority in Higher Education

(*Continued from page 566*)

concern of the administrator who for a brief period happens to control or guide it. His voice is only one among the several.

Except in syllabus making, examination and assessment where specialised skills are necessary, in all other areas of academic administration a reasonable degree of involvement by the students, teachers and the parents is necessary to facilitate the smooth functioning of the institution. Campus discipline is, in fact, a sphere where joint decision making by students, teachers and administrators is most advisable. Several half hearted attempts have been made in our country to involve students at various levels of academic administration. Some universities have made provision to sit student representatives even on the Syndicate. However, there has been no appreciable decrease in student deviation. This is because such provisions which are hailed as revolutionary by academic innocents, have only helped to hook in a few student politicians into positions of meagre power and petty rewards in order to silence them. What has been thoughtlessly left out is a sincere effort to establish a fruitful dialogue between the administrator and the students through a permanent machinery of consultation and discussion in every educational institution of higher learning.

The role of the educational administrator or the head of the institution is pivotal in the campus. There is a general reluctance on the part of the administrative authority to involve the students and even the teachers in the day-to-day administration and decision making. It is only when the going becomes hard due to the outbreak of student violence, the frazzled administrator confabulates with the teachers and the students so that he might be bailed out of a hopeless situation. Even on such occasions he would prefer to forget a cardinal principle of democratic procedure that those consulted should know whether they have been summoned just for advice and consent or as members competent to make decisions. Commenting on this aspect of admininstrator behaviour R.S. Peters writes :'It is perhaps better that a head (of an institution) should not hold staff meetings at all than that he should hold them ostensibly to make decisions but with the private thought that they are a convenient context in which people can be told what to do'. A democratic principle should not be used as a facade for paternalistic and authoritarian manipulation by the administrator. Authority should not degenerate into authoritarianism. ☐

Restructuring Commerce Studies

K. Gangappa*
S. Ravishankar

Eminent educationists have been stressing the need to make commerce education more logical with a practical bias and relevance to the job-market. Amidst deteriorating standards, the expansion of commerce education has been so rapid, that the enrolments at times were much higher than in the medical and engineering courses. But it is tragic that the principles, policies and syllabi of 1960's have been in vogue till now in this field of education. Neither the syllabi nor the teachers have changed to the present conditions. That is the context of the call for a restructuring of the course.

This may be on the model of the courses offered by professional institutions like IIMs. Commerce education need to be made more economically and socially viable. In restructuring commerce courses, the first task is to have a comprehensive survey of the present-day occupational skill needs of the industrial sector. Secondly, the 'quality' should be sought to be improved by attempting to raise the minimum passing marks, reducing the number of choice questions in examinations and introducing the system of external evaluation. Due to the lack of an adequate mathematical background, a young graduate miserably fails in his CA exams. Thirdly, a practical outlook can be developed only by introducing compulsory practical training at least in the final year of the degree course. Modification of the aims of commerce education is necessary to ensure recruitment of trained teachers who could produce students with recognisable competence and practical knowledge.

People say that some are born with the gifts of intelligence; but the fact is that the environment is very influential in shaping the attitudes and interests of an individual. Accumulation of intelligence depends on the atmosphere in which a person is brought up, the surroundings, the resources and facilities he has at his disposal. Proper training through short term refresher courses should be provided to the teachers concerned. Reformation through elimination of the irrelevant content from the curriculum is also needed; otherwise the student community would be put to confusion and hardships in coping-with heavy syllabi.

While attempting to restructure the commerce courses, the problem of mounting unemployment among commerce graduates and postgraduates has to be given serious thought. In fact, the commerce postgrduates at times face much hardship in finding jobs than the graduates and if this trend continues in the years to come, the image of the course may suffer. And as a result people may opt for other alternatives right from the +2 stage onwards. Such alternatives may be non-professional courses which are unproductive in terms of industrial skill needs.

Further, the reforms should be done cautiously, maintaining a balanced relationship between the universities and the specialised institutions conducting courses like ICWA, CA, ACS, Fellow in Management, etc., which are very popular in our country. The students from the universities, at times of need, should be allowed to take special coaching in institutions like the Indian Institutes of Management. For effecting desirable changes, all commerce colleges and university departments of commerce should have workshop facilities to provide practical training to students within the premises of the institution.

There should also be periodical exchanges of university teachers and industrial training managers to the benefit both of the educational institutions and industry. Another aspect in restructuring is 'practical skill orientation', which is a basic need for giving a professional blend to commerce courses.

Skill oriented subjects may be 'self-employment oriented' or job-oriented (e.g. subjects like tax-laws, secretarial practice etc.).

Restructuring on the above lines would go a long way not only in making the commerce discipline more relevant to the rapidly changing socio-economic environment, but also would make it more profession-oriented, to meet the occupational demands of a progressively industrial nation. □

(*Courtesy : The Hindu*)

Research Fellows, Institute of Public Enterprise, Hyderabad.

To Be or Not to Be

(*Continued from page 567*)

a V.C, to face teacher—politicians strutting all over the place as super-authorities—to meet student—leaders ordering about and terrorising everybody—to hold parleys with dictating syndics—and the last, but not the least, to listen to the fantastic demands of student—senators! The only safety lay in the hands of the Chancellor. But now the Chancellor, himself ill or well advised, is reported to have cancelled the rustication order of a V.C. and to have cancelled the cancellation order of a V.C. of an examination proved to him to be reeking with the use of unfair means. To add insult to the injury, a V.C. may get a S.O.S. from somewhere, any time of day or night, asking him to quit.

The question, as such, looms large—To Be or Not To Be a V.C. A university is not now a sacred body to be touched by a selected few, it is like a pie in which everybody may have his or her finger. The test of a V.C. today is not so much, how far he can fulfil his obligations as a V. Cs. as to what extent he can tolerate indignities and humiliations heaped upon him.

Someone, however, has to be a V. C. and wear the crown of thorns and maintain his efforts To Be. If Hamlet failed and got into the trap of Not To Be it was his Fate which drove him into it. □

(*Courtesy : The Indian Nation*)

CAMPUS NEWS

Bihar to maintain C.R. of teachers

The Bihar Government has decided upon measures to make college and university teachers more responsible towards teaching work. The cabinet which okayed ordinances on universities inserted a clause making provision for the maintenance of character roll of lecturers and readers by the Heads of departments and principals of the colleges concerned. The annual increment and efficiency bar of college and university teachers will be decided by the Vice-Chancellors in the light of their character rolls just as in the practice in government departments. Similarly, the character roll of heads of departments and principals will be maintained by the Vice-Chancellors, according to the ordinance.

It has also been decided that the lecturers who held Ph.D. degree for 13 years and had rendered 18 years of continuous service would be promoted as Readers in Degree Colleges and Universities of the State. Their promotion would be treated as personal promotion of the lecturer concerned and the basis for such promotion would be the qualification and performance of the teachers concerned. The post held by such teachers would continue to be treated as upgraded from the date of the promotion of the teachers till they continue to hold that post. These posts would be converted back to the grade of lecturers when such teachers who have been promoted as Readers are promoted to a higher post or retire from service or are dead. The promotion of Lecturers as Readers, would, however, not be automatic. The screening committee constituted by universities would recommend the cases of such teachers after taking into account their academic achievements and their service records. Posts higher than those of Readers would not be filled up by promotion but on the basis of qualification only after such posts have been advertised openly. The state government would bear the financial burden for implementing this decision and make suitable grants to universities. This would take effect from the date of the issue of the order.

TN appoints committee for varsity & college staff demands

The Tamil Nadu Government has decided to refer the representations of the teaching and non-teaching staff belonging to the Universities and colleges in the State to a one-man committee set up under the chairmanship of Mr C.V.R. Panickar, IAS. The demands of the teaching and non-teaching staff of the Madras, Madurai Kamaraj and Annamalai Universities, and the Perarignar Anna University of Technology and the colleges under the Directorates of Collegiate and Technical Education come within the purview of this committee. Representations already received by the Government are to be referred to this committee. The Registrars of the Universities and the Directors of Collegiate and Technical Education have been requested to forward representations of the staff in the institutions under their control to the committee. The committee will examine all representations against the background of the UGC recommendations on pay scales and other allied issues of the teaching staff of the Universities, colleges and technical institutions. It will submit the report containing its recommendations to the Government within three months' time.

At present the pay scales allowed to the non-teaching staff of the Madras University are higher than those allowed to the Government staff. Non-teaching staff of the other Universities have represented to the Government that their pay scales should also be revised so as to be on par with the pay scales of their counterparts in the Madras University. The Education Secretary, Mr C. Ramdas, pointed out that the recommendations of the committee would be in the hands of the Government before the end of November.

Proposal on regional languages

The Union Government is considering a proposal to introduce regional languages as media of instruction in all unversities. The University Grants Commission (U.G.C.) has been asked to take steps in this regard during the Sixth Plan period and assist the universities to switchover to the regional languages as media of instruction. The U.G.C. will help the universities in organising summer training camps for teachers and in preparing reading material and text books in the regional languages. This is in pursuance of the recommendations of a working group appointed a few years ago to go into this question. The working group has also pointed out some snaps in the speedy switchover from English to the regional languages as media of instruction, especially in relation to the use of regional languages as media of examinations. For instance, it has said, the publication of books and reference material can hardly keep pace with the reading material available in English. Secondly, for a variety of reasons, the employment prospects of students who have done their courses in English medium are better. Thirdly, in the universities where the regional languages are used as media of instruction at the undergraduate level but English is the medium at the postgraduate level or in professional courses, the switchover creates several serious problems, especially in the absence of orientation courses in the use of English language. To bridge the growing gulf between students educated in English medium schools and those educated in schools which have Hindi or other regional languages as media of instruction, the working group has suggested that steps should be taken to make the students proficient in the regional language, and also the link language English or Hindi. Presently, of the 118 universities and institutions in the country, 83 universities are using regional languages as media of instruction.

Doles for jobless graduates in Tamil Nadu

The Tamil Nadu Government has announced a Rs 4.5 crore "unemployment doles" scheme under which it proposes to give cash doles of Rs 50 a month to each of the unemployed graduates in the State. The scheme, which came into effect from July 1, will operate for three years after which it will be reviewed, Mr M. Vijayasarathi, State Minister for Harijan Welfare and Employment, said unemployed graduates, post-graduates, high school, secondary and higher secondary school physical education instructors, Tamil Pandits, pandits of other languages, craft inspectors and engineering diploma holders would be covered under this scheme.

Those below the age of 35 with an annual family income not exceeding Rs 6000 and those having their names in the live register of the employment exchanges for the last five years were eligible for getting this dole. In the case of Harijans, scheduled castes and scheduled tribes the upper age limit would be 40. Mr Vijayasarathy said the applicants should be those who studied in educational institutions in Tamil Nadu. Their parents should also be residents of the State. If the applicants were part-time employees, their monthly income should not be more than Rs 50.

President inaugurates ayurvedic research centre at Coimbatore

President Neelam Sanjiva Reddy called upon the Ayurvedic practitioners in the country to undertake the humanitarian task and help in the development of a healthy nation. He said though considerable progress had been achieved in the health services in the last three decades, much remained to be done to provide medical facilities to the masses, particularly in rural areas. He was laying the foundation-stone of the International Institute of Ayurveda sponsored by the Arya Vaidyan Rama Varter Educational Foundation of Coimbatore at Patanjallpuri. The President said that there were about 400,000 ayurvedic practitioners in the country. The only economically viable means to deliver satisfactory health care to our masses is to harness the vast ayurvedic army, provide them with better vocational training and equip them with necessary facilities. One of the fundamental rights of every human being was to enjoy the highest standard of health attainable. The concept of health was not merely absence of disease but a state of physical, mental and social well-being.

Mr Reddy said the practice of traditional medicines would be economical as most of the medicines could be prepared from materials obtained locally. He therefore urged the Ayurvedic practitioners to spread knowledge about simple remedies available within easy reach. The medical uses of commodities like ginger, pepper and plants like tulsi should be made known widely to the people. Ayurveda was more than a system of medicine. It was an integral part of ancient Indian tradition and it was today recognised as one of the fully integrated medical systems. of the world.

Mr Prabhudas Patwari, Governor of Tamil Nadu, who presided, said with the available resources, technical know-how and scientific methods, the country should produce quality Ayurvedic drugs and market them all over the world at reasonable prices.

Mr K.R. Narayanan, Ambassador-designate to the U.S. and Vice-Chancellor of the Jawaharlal Nehru University, New Delhi, while inaugurating the Centre of Social Medicine and Community Health of the university to be located at the Institute in Coimbatore said the indigenous system of medicine continued to dominate the health care programme in China and elsewhere. Ayurveda, he said, was being neglected in India.

Panel to consider Simla Institute reorganisation

The Union Government has set up another expert committee to examine the affairs of the Indian Institute of Advanced Study at Simla and recommend steps for its reorganisation and restructuring. The committee while working out the details will also examine whether the Institute can include Philosophy and Culture as the other areas of focus in its activities. It will also see to it that its activities include research in inter-disciplinary areas, comparative Asian civilisations and in the field of education with particular reference to higher education. It will also recommend where and in what manner could the Institute act as a nucleus for organising summer courses and summer schools for scholars, to begin with from the central universities, in subjects and areas with which the Institute may be concerned.

It will also give its recommendations with regard to location of the Institute in Simla or any other place in the country with particular reference to suggestions regarding Poona, Hyderabad and Baroda. Mr Krishna Kriplani, former Secretary of Sahitya Academy would be the Chairman of this committee. The other members of the committee are: DrV.S. Jha, former Vice-Chancellor of Banaras Hindu University; Prof. T.M.P. Mahadevan, former Professor of Philosophy, University of Madras; Prof. Alam Khundmiri of Kashmir University; Prof. R.K. Mishra of the All-India Institute of Medical Sciences; Dr P.L. Malhotra, Dean of Colleges, Delhi University and Mr Kireet Joshi, Education Adviser, Ministry of Education. The committee is expected to submit its report within a period of three months.

Lamp lighting ceremony at AIIMS

Speaking at a lamp lighting ceremony at the All-India Institute of Medical Sciences, New Delhi, the Prime Minister, Smt. Indira Gandhi, said that the country required a cadre of intermediate health workers to extend medical services to the countryside. The medical profession so far had unfortunately graviated to big cities and towns, depriving rural areas of a valuable service. She said that she had the deepest admiration for the nobles and most essential calling. She felt that the major problem still is uneven development of health services and nursing in different regions. Upto ten years ago, the majority of the nurses in this country came from a single State, Kerala. To the Kerala nurses goes the credit for keeping up the tradition of the profession in India and even abroad. The Kerala system of rural medical aid is a good one, largely due to the dedication of Malayalee nurses. Kerala has a low rate of infant mortality and also leads in family planning. This is the result of the growth of education, particularly among the underprivileged and minority communities.

Women doctors and nurses are crucial for the transmission of ideas of health, hygiene and family welfare. In the wards, nurses should educate patients in the elementary principles of health, hygiene and nutrition, like care of the teeth, clipping of the nails, dietetics etc. without which health care cannot be had. It is good if wards could be decorated with charts, picture, posters etc. giving information about nutrition, physical exercises and simple do's and don'ts. We must have far more community health and public health nurses so that medical care does not remain hospital-centred or institution-based. Science should reach out to the people and these two categories of nurses can provide preventive, promotive, curative and rehabilitative care within the family environment.

A nurse is not merely an aide and assistant to a doctor. She has an independent part to play in many areas where doctors need not necessarily be present. In the Western world, nurse anaesthetists, properly trained, take on important duties in minor surgical procedures, as also in care of the newborn etc. The nurse is in here own right a key member of the medical team. Many intensive care units, dialysis units, dialysis units and blood banks today fall within the realm of nursing specialities. Auxiliary nurse midwives, who do such valuable field work along with women health visitors, should be given due recognition on a basis of equality and not be regarded as lesser members of the profession.

We also need nurses who could undertake the responsibility of looking after the old, infirm and chronically ill patients at their residence, like the paralysed or patients of chronic heart trouble.

Voluntary social workers should be organised to relieve the nurses of the many non-clinical tasks the latter are saddled with in our hospitals, e.g. filling of forms, store-keeping, and so on. Besides the approximate 200,000 registered medical practitioners of the modern system of medicine, we have a large number of practitioners of traditional systems. But the degree of care available in the remotest corner of the country is still negligible. We have to depend upon an intermediate level of health personal to provide this basic service.

Even the supposedly advanced and affluent countries have a category called the medical assistant. In our country, with the requirement that all doctors should have degrees, the profession has gravitated towards big towns and cities. Rural areas have few medical facilities either in personnel or equipment. It is important to develop an intermediate level health person who could extend health care to the remotest areas. This programme could be integrated with the training of community health nurses and public health nurses.

Mr. Kirpa Narain, President of the Institute, said that nurses and their auxillaries were the key health workers who served our people in the remotest villages.

The Union Minister for Health and Family Welfare, Mr B. Shankaranand, stressed the need for reorienting the medical profession to meet the needs of rural India. The status nursing, he said, needed to be elevated to a position commensurate with the value of the service performed.

Dr. L.P. Agarwal, Director, AIIMS, said that "our medical education is mainly hospital-based rather than community based". Realizing such major anomalies in the pattern of education, in 1979 a new M.B., B.S. curriculum has been developed at this Institute. The provisions incorporated have been considered as bold and imaginative. Right from the time that a medical student enters the portals of this institution, he is now being introduced to a course in humanities and human behaviour in relation to medical practice. This is likely to make the future doctor suitable for working in a community with a full understanding of human needs, socio-economic development of the country, and cultural background, besides facilitating the development of the areas of communication and comforting and the understanding of human behaviour. Further, there have been major changes incorporated both in the curriculum contents as well as the duration of different phases of the undergraduate curriculum. A more significant and innovative approach is to make the fiifth year of the course entirely devoted to family medicine / community medicine. The whole trainining is to be imparted outside the four walls of the teaching institution. This will be done in a district and subdivisional hospital set - up with emphasis on working in the primary health centres and urban slums at the peripheral level.

University employees confederation meets in Bombay

A two-day meeting of the All-India University Employees Confederation in Bombay noted that the Governments of Andhra Pradesh, Orissa and Bihar were planning steps to withdraw certain monetary benefits like house rent and conveyance allowance for the university employees. The President of the Confederation Mr George Fernandes said that over 100,000 university employees would observe a one-day token strike in support of their demands like all-India pay-scales, linking of DA with the cost of living index and employees' representation along with students and teachers on university bodies. He said that a seminar on democratisation of university administration would be held in November this year in New Delhi. Representatives of teachers and students organisations are expected to participate He hoped that the Bill he had moved in the last session providing for representation of the non-teaching staff and students on administrative bodies of universities and University Grants Commission would be taken up during the ensuing session of the Parliamentary.

Punjab proposes technical university

Efforts are being made to set up a technical university in Punjab. It has been felt that there is a need for diversification of higher education which has so far been limited to general education. The State has already three universities dealing with general education. A welcome development was the establishment of Punjab Agricultural University in the sixties to spread higher education in agriculture.

A stage has been reached when Punjab should have an apex institution to promote higher education in technology. Such an institution, the Chief Minister of the State said in Chandigarh recently, should serve the growing requirements of industry in the region. The Chief Minister made these remarks at the annual day function of the Technical Teachers Training Institute. In his address he emphasised the need to have a well established system of technical education in the State. He appreciated the move of the TTTI to survey the needs of polytechnics in Punjab with regard to curriculum implementation and diversification of diploma courses. He assured the management that the State Government would take the necessary follow-up action on the survey.

NEHU to start M.Com. courses

The North-Eastern Hill University, Shillong, proposes to start M.Com. courses at Kohima from the current academic session. To begin with there would be 20 seats for these courses. The course is patterned on the semester system and the students are required to complete satisfactorily all the four semesters.

The course has been introduced at Kohima in order to meet the urgent requirements of the students of this region. It is expected that the students of Meghalaya, Mizoram and Nagaland would take full advantage from these courses and also avail of the other opportunities offered by NEHU.

Panjab's gesture to Arunachal students

The Panjab University Syndicate has permitted Arunachal Pradesh students to take Panjab University examinations for two years on certain conditions. It has also agreed to provide two additional seats in the Department of Geography for students of Jawaharlal Nehru College, Pasighat (Arunachal Pradesh). A few seats in other departments would also be provided to the students of the college during the current academic session.

Two new universities cleared for Tamil Nadu

The Tamil Nadu Education Minister, Mr C. Aranganayagam, said that the Centre has given approval for setting up two universities at Tiruchirapalli an Coimbatore. The government wil bring forward legislation in th next Assembly session for thi purpose and may issue an ordinance. The University Grants Commission had given clearance for the setting up of these universities. The Minister said a committee of experts would be set up soon by the State Government to report on the starting a Tamil University in the State.

Himachal likely to have new university at Solan

A proposal to set up a separate university for horticulture and forestry at Solan is under the active consideration of the Himachal Pradesh Government. The State Agriculture Minister, Mr. Sukh Ram said that a Pro-Vice-Chancellor of this university was being appointed soon who would work out the other details.

Prof. Shafi honoured

Professor Mohammad Shafi, Chairman of the National Committee and leader of the Indian delegation attended the 24th International Geography Congress at Tokyo and presided over the meetings of the International Commission on Agricultural Productivity and World Food Supply at Nagano in Japan in August/September, 1980. The Congress was attended by over 1500 geographers from 63 countries of the World including U.S.A., U.S.S.R., Germany, Japan, U.K., Australia, New Zealand, Brazil, Nigeria, Egypt, Canada, Mexico, countries of Western Europe, Iraq, Libya, Malaysia and India. Professor Shafi of Aligarh Muslim University in his presidential address to the International Commission of Agricultural Productivity exhorted the members attending the Commission to apply the geographical techniques and methods for raising the agricultural production to eliminate malnutrition and undernutrition from a large part of the population of the Developing World.

The Congress was opened in the most gorgeously decorated Hibiya Hall by Her Royal Highness, Princess Chichabu. The Congress discussed a host of problems including forecasting of hazards, environmental, pollution and protection of the environment, National Land Policy, etc.

The General Assembly of the International Geographical Union has established a new International Commission on Comparative Research of Food Systems of the World with seven eminent geographers from U.S.A., U.S.S.R. Japan, Brazil, Denmark and Nigeria and Canada. Prof. Shafi has been appointed Chairman of this Commission.

NEHU Development Council meets in Shillong

The College Development Council of the North-Eastern Hill University met recently under the chairmanship of Dr. A.K. Dhan in Shillong to discuss the causes of academic deterioration in the affiliated colleges and to suggest ways and means for improving and raising the academic standard of the colleges. The Council appointed a five-member sub-committee to survey and explore the numerous problems faced by these colleges.

The sub-committee will shortly visit the affiliated colleges to assess their needs and requirements. and reveal ways and means to solve their problem. It will also advise the university on related academic matters.

Second campus for Patna

The Patna University will soon have a second campus for post-graduate teaching and research. The decision to have a new campus was taken by the Bihar Inter-University Board in view of increasing number of students and opening of new departments. The present campus is too crowded to accommodate all the students. The Government had already agreed to allot a piece of land to the university for construction of the new campus. The existing campus would be available for undergraduate teaching.

Institute of science completes 75 years

The Institute of Science, Bombay, would be celebrating the diamond jubilee this year. The Education Minister of Maharashtra, Mr. Baliram Hiray said that as part of the celebrations seminar and several national symposia in different disciplines of science as well as refresher course for teachers in Chemistry would be organised. In the seminar it is proposed to invite eminent specialists from all over the country. Distinguished scientists from Japan, Canada, USA and some developing countries would also participate. The highlights of the seminar would be the release of a diamond jubilee volume embodying the contribution of the institute in the field of science in last decade.

Scholarships for studies abroad

The Union Ministry of Education & Culture has invited applications from Indian nationals for the award of Commonwealth scholarships for higher studies in the United Kingdom, Canada, Trinidad and Tobago and Sigeria during 1981. The subject fields include medicine, engineering and technology, science (pure and applied), agriculture and allied fields and humanities and social sciences.

Medical institute for north-eastern India

The Meghalaya Government is planning to establish an Institute of Medical Sciences in Shillong. The Minister for Health, Mr. D.D. Lapang, said that the Indian Medical Council had already approved the proposal which would initially cost Rs 25 lakhs. The institute would provide advanced and specialised medical treatment and also facilities for postgraduate studies and research. The Meghalaya State has already long standing established medical institutions including the Pasteur Institute which would offer supporting facilities to the proposed institute.

Bihar to hold test for private students

No private student in Bihar will be allowed to appear at university examinations directly unless he passes test examinations conducted by colleges. A decision to this effect has been taken by the Bihar State Inter-University Board. The Board has made it compulsory for private students to attend classes for at least three months for appearing at the Master's degree examinations. The Board also suggested that the number of private candidates should not be more than 25 per cent of regular students. The jurisdiction of the university in granting permission to private candidates should be limited to the residents of its own territorial jurisdiction.

BHU transfers process of manufacturing coke briquettes

As part of its Industrial Consultancy and Testing Services, the Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, has provided technical knowhow for the production of coke briquettes to M/s K.B. Enterprises of Varanasi. The process was developed by Dr R.C. Gupta, Professor B. Prakash and Professor S.L. Malhotra. What makes these coke briquettes different from those presently available in the market is their higher heating value, smokeless combustion, better weathering resistance and reusability even after partial combustion.

This new coke briquette factory of M/s K.B. Enterprises—a small scale industry—has been inaugurated on 26th August 1980. On the occasion of the signing of the technology transfer contract, Dr S.S. Saluja, Director, Institute of Technology, BHU while congratulating the Department of Metallurgical Engineering referred to its active role in promoting industrial liaison. A notable example of the recent years is the process knowhow developed in collaboration with Professor P.M. Prasad of the same Department for the setting up of yet another important small industry at Varanasi itself viz., M/s Tulsyan Ferroalloys Ltd., for the production of vanadium pentoxide and Ferrovanadium from the vanadium sludge from the Aluminium Industries.

Summer school on coal & petroleum held in Dhanbad

The Indian School of Mines, Dhanbad, conducted a three-week Summer School Programme on Coal and Petroleum sponsored by the Indian Society for Technical Education. The programme covered a wide range of aspects relating to the exploration, exploitation and utilisation of coal and petroleum. The programme was handled by 16 faculty members—six from the School and other from the Geological Survey of India and Central Fuel Research Institute. Field visits and technical film shows were also arranged on this occasion. Seventeen persons drawn from different universities and engineering coledleges participated in the Summer School.

Centre for non-formal education proposed

The Education Ministers from thirty commonwealth countries including India met in Colombo for the Eighth Commonwealth Education Conference. The conference also accepted the invitation of India to host the second conference in India. The conference met without a structured agenda and took stock of political developments in the region since its Sydney conference held in 1978. President J.R. Jayewardene of Sri Lanka inaugurated the conference. Mr. S.S. Ramphal, Commonwealth Secretary-General, also spoke on education and the development of human resources.

The conference adopted the report of the meeting of officials as also that of three ministerial committees. On non-formal education the conference recommended that the secretariat should undertake on an urgent basis a series of initiatives in this sector including a study on the feasibility of establishing a Commonwealth resource centre for non-formal education. Referring to the controversial issue of recent increases in fees in Britain payable by overseas students, the conference recommended that Governments consider setting "reasonable levels of fees" for students from Commonwealth countries.

Prof. Reddy's novel suggestion

Prof. G. Ram Reddy, Vice-Chancellor, Osmania University, has suggested that interviews of selection committees for various appointments and admissions to special courses be telecast to ensure edifying public image regarding impartiality. Prof. Reddy made this suggestion at the felicitation function organised by the Osmania University Teachers Association on his reappointment for a second term. He also informed the faculty members that the University Grants Commission had agreed in principle for personal promotion of the university staff, relaxing certain conditions in the case of senior and experienced members of various faculties of the university. However the clearance from the Education Minister was awaited.

Postgraduate Journalism course

The University of Nagpur plans to start a postgraduate-course in Journalism from the next academic session. Prof. W.M. Kalmegh said in Nagpur that the course was needed as the journalists in the region did not have the facilities for pursuing the postgraduate programme.

Kashmir seminar on central Asia

The University of Kashmir organised a two-day seminar on the history and culture of central Asia under the auspices of the Centre for Central Asian Studies. Prof. Nurul Hasan, Vice-President of the Council of Scientific and Industrial Research while inaugurating the seminar briefly traced the historical and cultural relations between our country and the Central Asia. He stressed that the study on the entire region should be brought up-to-date.

A large number of papers were presented and discussed at the seminar. The subjects discussed were: Philosophers of Central Asia; Buddhist contours on the life of Kashmir; Important sharda inscriptions of Kashmir; Indo-Afghan relations; Background of Iranian revolution and an inscribed Brahma image of the reign of Sultan Sikandar.

UGC Associateships for S/C and S/T teachers

The University Grants Commission is to award twenty research associateships in humanties including social sciences besides sciences and engineering and technology to teachers and research workers from scheduled castes and scheduled tribes. The research associateships are intended for candidates preferably below the age of forty five years who have obtained a doctorate degree, have published research work to their credit and have already shown evidence of independent research work. The associateships are tenable initially for three years which can be extended up to two more years. The awards will be made in three categories, 'A' 'B' and 'C' carrying fixed emoluments. For category 'A' there are Rs 1000/- per month; for category 'B' Rs. 1200/- per month and for category 'C' Rs. 1400/- per month. In addition, there would be a contingent grant of Rs 2,000/- per annum. The associateships and contingency grants will be exempted from income-tax. The application forms can be had from the university or from the Commission's office.

Madras curriculum for private studies

The Madras University has decided to permit candidates who have completed 28 years to appear privately for the B.Litt (Tamil) degree examination. The Government has issued a communication that the existing regulations would be followed for bonafide teacher candidates who apply for exemption for appearing for the pulavar preliminary to be held in April 1981 and final in April 1982.

Department of pharmacology makes further headway

The Department of Pharmacology of Regional Research Laboratory, Jammu, was conceived and established in forties by Col. Sir R.N. Chopra, the father of Pharmacology in India. This Department was established with the objective to evaluate the flora growing in abundance in this sub-Himalayan region for their medicinal value. The approach in this programme was based on the then existing pattern of evaluation, the main feature of which was random selection of flora, botanical identification, preparation of 50% alcoholic extract and its pharmacological screening. In case of any promising lead, its further fractionation and testing was undertaken. This was the conventional procedure adopted by other centres of drug research also in the country. Though about 400 plants were screened, some in more detail, but none of the plant material could come upto the promise of a new drug. After this frustrating experience, a decision of far reaching significance was taken in the early seventies. Instead of extensive superficial screening of large number of plants, intensive indepth studies were undertaken on selected promising plants. In the selection of plants, reliance was made on information sources on the existing usage of certain herbals for relief and cure of specific ailments and the ethnobotanical information received through the generosity of persons who were in possession of such information.

The experience of last 6-7 years regarding the new approach of the evaluation of herbal plants and development of new drugs, has been most rewarding. Presently there are about a dozen phytochemicals or their analogues, homologues and semisynthetic derivatives, on which pharmacological investigations are being completed and have the promise to come up as new drugs. These compounds have shown diverse types of activities such as bronchodilatory, oxytocic, anti-inflammatory, tranquillosedative, neuromuscular blockings hypotensive, spasmolytic, anti-atherosclerotic, rejuvenator, contraceptive, abortifacient and anti-hepatotoxic. Clinical trials on some of these have already been taken up. Many other compounds are at various stages of investigations and would soon reach the clinical trial stage. The results of these fruitful pharmacological investigations have been published in national and international Journals of repute and have also been presented at various symposia/conferences.

The team of scientists engaged in these investigations is highly qualified and experienced in different branches of science i.e. medicine, surgery, pharmacology, physiology, biochemistry. zoology, botany, chemistry and pharmacy. There is also interaction with other disciplines of the Institute i.e. Chemistry, Botany and Radiation Biology. The multidisciplinary character of the team and interaction with other disciplines of the Laboratory has proved to be highly rewarding. The impact and highlight of the contribution of this Department for the last 6-7 years can be realised from the fact that a number of drug houses both national and multinational, have approached the Laboratory for release of know-how on the new drugs. It is hoped that the contributions of this Department in the field of drug development are likely to change the existing approach being followed at other centres of drug development in the counry as well.

Need for manpower planning emphasised

Prof. G. Ram Raddy, Vice-Chancellor, Osmania University, while presiding over a seminar on industrial growth through incentives organised by the Osmania Management Association in Hyderabad said that it was sad that we have not yet correctly estimated for manpower requirements. It was very necessary for the country so that universities could design courses in accordance with the requirements. He exhorted the students of MBA to be judicious while selecting the type of industries, incentives offered by the Government if the students wished to start any industry. They should learn how to live with certain types of Governmental procedures so that they do not get frustrated due to initial setbacks. Stating that the students learn how to push papers in the Government officers, the Vice-Chancellor appealed to the Government to simplify the bureaucratic procedures. This would give best incentives in achieving better results.

Mr. B. Pratap Reddy, Secretary to the State Industries Department, said that the management of science was a new concept and management courses offer potential to make good managers by reducing the gropping periods. Stressing the need to start small scale industries by the students he asked them to prepare themselves to face challenges during the initial stages. Students should develop determination and willingness to experiment to start industries. He assured that government help would be forthcoming in starting small scale industries.

NCERT raises fellowship for weaker students

The National Council of Educational Research and Training has decided to give from this year 50 additional scholarships exclusively to students belonging to scheduled castes, scheduled tribes and deprived sections of society. This will be in addition to 500 scholarships being offered by the NCERT to the successful students in the national talent search scheme. The additional scholarships are intended to encourage students of the weaker sections who are talented but do not come within the range of regular scholarship.

News from Agril. Varsities

Centre to set up farm consultancy body

The Union Government is considering a proposal to set up an agricultural consultancy organisation in the public sector to render consultancy service overseas and at home in the field of agriculture and allied activities. At present a few private agencies are tendering agricultural consultancy service in foreign countries. These agencies, however, do not have adequate resources at their disposal. There has been great demand from the developing countries in Africa and West Asia for specialised Indian technical personnel in the field of agriculture after the country achieved a breakthrough in food production. Recently Ghana has sought Indian assistance in setting up an integrated rural development project. The proposal to set up an agricultural consultancy organisation has already been approved by the Union Ministries of Finance, External Affairs, and Commerce and the Planning Commission. It is now awaiting approval by the Union Cabinet. The proposed organisation will be set up under the Department of Agriculture with an initial authorised capital of Rs 75 lakh and a paid-up capital of Rs 20 lakh. It will render consultancy service in land use, land reforms, commodity handling, processing, storage and marketing besides the setting up of research institutes including extension services, credit development and marketing organisations.

In most of the developing countries, agriculture is the single largest investment sector. It also receives the largest financial assistance from the international agencies, including the World Bank, the Asian Development Bank and the funds established by OPEC. The World Bank alone is currently appraising 700 projects of which 200 are in the agricultural sector and will involve an outlay of over $2 billion. Similarly, the Asian Development Bank appraising 40 projects in the agricultural sector with a projected outlay of about $350 million. The consultancy service will also generate other business in terms of export of Indian farm equipment, including irrigation pumpsets, tractors and earthmoving equipment.

All India wheat workshop at Anand

The 19th All-India Wheat Research Workers' Workshop of the Indian Council of Agricultural Research was organised at the Anand Campus of the Gujarat Agricultural University. Shri Madhav Singh Solanki, Chief Minister of Gujarat, inaugurated the workshop. About 200 wheat scientists of different disciplines from different agricultural universities, state departments of agriculture and central institutions participated in this workshop. The scientists besides developing strategies for increasing wheat production in the country, identified eleven new wheat varieties for cultivation under different crop production conditions of the country. These new wheat varieties are expected to bring in the much needed diversity in wheat cultivation. The new wheat varieties identified for the different zones are as follows:

Northern Plains Zone (Punjab, Jammu, western U.P., eastern Rajasthan, Delhi and northern M.P.).

DWL 5023 (Durum) HD 2281 and CPAN 1976: For timely sown high fertility irrigated conditions.

Central Zone (Whole of M.P. except Chhatiagarn area, Saurashtra, Middle and Southern Gujarat, Bundelkhand area of U.P. and Kota & Udaipur Divisions of Rajasthan).

Raj 1555 (Durum) and HD-2278: For timely sown irrigated high fertility conditions.

LOK-1: For late sown high fertility irrigated conditions.

Ju-12 (Durum) and Sujata selection from C 306): For low fertility rainfed conditions.

North Western Plains Zone (Eastern U.P. and northern Bihar) HUW-37: For timely sown irrigated higher fertility conditions.

Northern Hills Zone (Hills of Jammu & Kashmir, H.P. and U.P.)

DL 20-9: For both low and high fertility rainfed and irrigated conditions.

HD 501: For timely sown low fertility rainfed conditions.

It was noted that the most popular variety Sonalika has become highly susceptible to brown rust in the last season. There is an urgent need to replace this variety as in the case of Kalyansona, as early as possible. The workers felt that seed multiplication of new varieties should be taken up on a massive scale so that wide spread damage is not caused by cultivation of single geno-types on large areas in times of epidemics caused by diseases. The 11 new wheat varieties identified in the Workshop will be extensively multiplied during the 1980-81 season and simultaneously they will be tested in adaptive trials.

It is for the first time that a **durum** variety has been identified for cultivation in the northern plains zone. If **durum** cultivation is successful in this zone the damage done by Karnal Bunt and Loose Smut can be minimised. The extra **durum** wheat produced in the zone could be used for export purposes also. The same is expected of the **durum** variety Raj-1555 in the central zone.

The scientists felt that there was immense untapped potential for wheat production in the eastern Madhya Pradesh, Orissa, Assam and other eastern states. If massive national demonstrations were taken up in these areas wheat production would go up significantly in the next few years. Th etechnique of wheat cultivation in rice soils was being perfected.

Farm research to be given priority

The Union Agriculture Ministry has planned continued rise in production in the coming years by laying major emphasis on consolidation, effective coordination, operational efficiency and selectivity to achieve the target of 160 million tonnes of foodgrains set for 1985 by the National Commission on Agriculture. The new programmes will fill in critical gaps in the agricultural research system.

Experts in the Agriculture Ministry are convinced that increased application of science and technology is imperative and research is an essential input if the pace of agricultural development is to be sustained and further production advances are to be made. The investment made on research infrastructure during the last 20 years has been highly rewarding. A study of return on research investment shown that until 1965, before the green revolution came in, investment of one rupee in agricultural research yielded a return of Rs 1.91 while after 1965 the return was Rs 14.91. The experts consider that the present outlay on agricultural research is much below the recommendations of the National Commission of Agriculture. It has been pointed out that there is a vast untapped reservoir available in most parts of the country in the crop, animal and fish production system even at the current level of technology. A network of 24 research centres under the dry farming research project has succeeded in evolving alternative cropping patterns which have potential for increasing production in most of dry-farming areas by a significant margin. The experts are of the view that as most of the oilseed and pulses come from dry-farming areas, steps should be taken to utilise this technology.

The Agriculture Ministry has therefore proposed to set up 70 centres for oilseeds research with an outlay of Rs 5.86 crores during the current year. A project directorate on oilseeds has been established at Hyderabad and a national centre on groundnut started at Junagarh. A number of improved varieties of oilseeds have been identified along package of practices. In order to enhance the regional research capabilities of agricultural universities, a national agricultural research project has been launched. The emphasis will be on food crops, dry farming and backward areas. In the new guideline on research while efforts would be continued to further enhance production potential, the problem of stability and conservation of production would receive special attention. The emphasis is gradually shifting to dry farming, multiple cropping and mixed farming. It has been realised that despite self-sufficiency in food, there has been hardly any increase in the per capita consumption of food nutrition particularly among the rural poor. The Government proposes to strengthen research and education in food and nutrition also. It is planned that in the coming years agricultural research would have, in view the triple goals of increased production, more employment and higher income to the rural poor and the under privileged. Research coverage would be more comprehensive and production, conservation, consumption and trade oriented. It would be more complex, more difficult and more costly.

Nagaland to have agricultural campus

Dr. A.K. Dhan, Vice-Chancellor, North-Eastern Hill University, paid a two-day visit to the Nagaland campus of the university with a view to finalising the Master Plan for a permanent campus for the College of Agriculture at Medziphema. In his discussions with the Agricultural Minister of Nagaland, the Vice-Chancellor stressed the need for having permanent site for the college so that other developmental works could be taken up soon. He maintained that without a permanent campus, the college would not progress as other allied components such as library, green houses and experimental fields could not be set up.

Dr. Dhan also held discussions with the Chief Minister of Nagaland regarding matters relating to the progress and development of the university campus at Nagaland. The Chief Minister appreciated the work done by the university and assured the Vice-Chancellor his government's full assistance and cooperation.

The question of transferring the Kohima Science College to the university was also discussed with the State Education Secretary. It is expected that after all the formalities are completed, the college would be handed over to the university as one of the constituent colleges directly under the jurisdiction of NEHU.

Further promotions for PAU teachers

The Board of Management of the Punjab Agricultural University has, at a recent meeting, decided that one-third of the vacancies of professor and associate professor level posts shall be filled through promotion. This is a new provision and will require amendment of the Statutes of the University according to which all posts are to be filled through selection.

In order to provide further opportunities for promotion to teachers the Board decided that senior class one posts lying vacant may be filled up by the Administrative Committee where justification for filling up such posts exists on the basis of workload. Proposals for creation of additional senior posts should be put up before the Administrative Committee and the Board of Management where there is justification for providing such posts. To provide encouragement to really outstanding and brilliant scientists, incentive scheme for out-of-turn promotions, cash awards, facilities for higher studies etc. will be formulated.

Regarding Research, Extension and Teaching Associates the Board has decided that those who are Ph.D.'s whether appointed on regular or ad-hoc basis will be assessed for their suitability for appointment to regular class two posts provided they fulfil the qualifications.

BHU releases new wheat varieties

The Department of Genetics and Plant Breedings, Faculty of Agriculture, B.H.U. has evolved Malaviya Wheat 12 (HUW-12) which is a miraculous wheat variety for North Eastern Plains Zones i.e. Central and Eastern U.P., Bihar, Bengal, Orissa and other North Eastern States.

Malaviya 12 has tremendous yield potentiality giving significantly more yield as compared to other check varieties. Trial yields were had for five years since 1974 to 1979. It achieved 1st position in All India Co-ordinated Yield trials. Now it has been released by the Central Varietal Release Committee. It is best for all fertility and irrigation levels and simultaneously it performs well even in rainfed conditions. Even during 1979-80 i.e. a year known for drought, when C-306 is best suited Malaviya-12 gave better yield. It gave 50 to 60 Quintal per Hectare. Its chapaties are smooth, soft, silky and pliable. It also gives sufficient 'STRAW'. Malaviya-12 is also disease resistant and is resistant to Karnal bunt—the new wheat disease which is yet to find its cure.

Another variety evolved by BHU—Malaviya Wheat—37 is a single dwarf 110-115 cm. thick and strong stemmed variety possessing excellent foliage, normal green colour. This variety also has been tasted in All India Co-ordinated Trials during last five years (1974-79) and it also gives 50 to 60 Quintals per Hectare in November sowing. It gives higher yield than Sonalika RR-21. It can be sown from 15th November to 20th December and can be fitted well in rice-wheat rotation Zone. It also has highly disease resistance to all disease including Karnal bunt.

Malaviya—37 is amber, hard, lusturous and medium bold consisting 75.8% flour as against RR—21, 73% Chapaties are good. Farmer can harvest more straw from this variety. All India Wheat Scientist Workshop held at Gujarat Agricultural University Campus, Anand has recommended it for general cultivation in North Eastern Plains.

Grain drier for PAU

A grain drier, which has a drying capacity of 3-4 tonnes per hour and a price of about Rs. 3 lacs, has been installed at the College of Agricultural Engineering of Punjab Agri. Univ. The drier consists of three metal storage bins, each of 25 tonnes capacity, two bucket elevators, one air heating device and other accessories like oil tanks and oil pump. It can dry different types of crops by reducing the moisture content of the grains 3 to 5 per

New Wheat varieties Malaviya-12 and Malaviya-37 recently released by BHU cent in one single pass while the air temperature can be varied from 350°C to 52°C. It works on crude furnace oil.

The College has plans to install several other plant facilities like the rice mill, a wheat flour roller mill, an oil mill, farm machinery production centre, cement pipes manufacturing, solar water heaters, electric motors and machinery repairs. These units will provide facilities to the students, technicians and other inservice agricultural engineers an experience of working in the actual plants. The students will have an opportunity to earn while they learn these skills. The importance of the integrated practical training programme for the agricultural engineering students was explained by Dr A.P. Bhatnagar, Dean of the College. The plans for setting up the Agro-industrial Complex, including the residue grain drier facility, were also explained.

Dr Amrik Singh Cheema, Vice-Chancellor said that the College will soon initiate a programme of imparting practical training at these plants to cater to the needs of various levels of technical personnel in the State.

PAU's adult literacy programme

The Punjab Agricultural University has started an adult literacy programme in some villages in collaboration with the Punjab Society for Adult Education. The Vice-Chancellor, Dr Amrik Singh Cheema visited Birmi village where sixty five middle aged persons have been enrolled and presented primers to these persons. The Vice-Chancellor told the village people that the example of countries like Japan has demonstrated that education was a major factor in the progress of any country.

Bank officers get training at PAU

Thirty young officers of the State Bank of India attended a 5-day training course at the Punjab Agricultural University. They were given lessons on agricultural financing, new farm technology, extension education and farm communication. Speaking on the concluding function of the course the Vice-Chancellor of the PAU, Dr Amrik Singh Cheema, called upon the young officers to help and guide the members of of the Youth Volunteer Corps which is an organisation of the active young farmers functioning throughout the State. The Vice-Chancellor suggested that apart from farming the loans should also be for enterprises like dairy, poultry, piggery, bee keeping, mushroom cultivation, etc. Dr Cheema exhorted the bank officers to approach these young farmers to give them all financial assistance because they will be able to return these loans later.

US scientists in PAU

A fiteen member delegation of Indo-US Joint sub-commission on agriculture visited the Punjab Agricultural University recently. In a meeting with the Vice-Chancellor Dr Amrik Singh Cheema the delegation said the reputation of this University in U.S.A had attracted them to it. The purpose of the visit was to identify areas in which collaboration in agriculture and allied activities would be beneficial to the two countries. The Vice-Chancellor said the university had gained much in the past from this kind of collaboration particularly in the field of advanced training for its scientists. The delegates discussed research work in the areas of animal production, plant breeding, water and fertilizer management and agricultural engineering with the scientists of PAU.

Kurukshetra gets two UGC projects

The University Grants Commission has sanctioned two major research projects in Earth Sciences at the Kurukshetra University, 'Studies of some geophysical aspects of U.P. Himalayas, using particle track detectors' would be under the supervision of Prof. K.K. Nagpaul of the Physics Deptt. The other project will be in the Department of Mathematics for research on 'Theoretical studies and their applications for investigating the seismo-tectonic phenomenon in the Himalayas with Dr. M.L. Gonga as the Principal Investigator, Prof. V.K. Gaur and K.N. Khatri of the Department of Earth Sciences of Roorkee University will be the co-investigators for these two projects. The results of the investigations will give information about tectonic activity in the region and this will be useful in prediction of earthquakes and exploration of minerals.

Subscription Rates

Period	Inland	Abroad	
		Surface	Air
	(Rs.)	(Rs.)	(Rs.)
1 year	16.00	80.00	140.00
2 years	30.00	150.00	260.00
3 years	44.00	220.00	360.00
5 years	72.00	350.00	550.00
Single copy	00.80 ps.	4.00	8.00

The Journal is mailed on 1st & 15th of every month.

News from UGC

UGC raises research fellowships

The University Grants Commission has decided to raise the value of its various research fellowships for students. The increase is on the basis of recommendations by a Committee appointed by the Commission to review the value, which was last fixed in 1974. The two main factors governing its decisions were the increase in the cost of living and the need to attract talented persons to research.

The revised scheme is being made effective from October 2, 1980. According to it, the value of the Junior Research Fellowship (JRF) will be Rs 600/- per month for the first two years as against Rs 400/- at present, with an annual contingent grant of Rs 3,000/- as against Rs 1500/- at present.

At the end of two years of JRF, the work done by the student will be assessed in a manner to be prescribed. If the work is found to be good, the fellowship will be increased to Rs 700/- p.m. during the third year to be designated as Senior Research Fellowship (SRF). This will mean an increase of Rs 200/- over the present value.

No assessment will be required in the case of those who have been awarded M. Phil during the first two years. The contingent grant will continue to be Rs 3,000/- per year.

The fellowship amount can be increased from Rs. 700/- to Rs 800/- p.m. in the case of those who have submitted their Ph.D. thesis. The enhanced fellowship of Rs 800/- will be effective from the date of submission of the thesis, with the same annual contingent grant of Rs 3,000/-. The total duration of JRF and SRF will not in any case exceed 4½ years.

Senior Research fellowships have been re-designated as Post-Doctoral Fellowships (PDF) of Rs 900/- per month each, signifying an increase of Rs. 300/-. The fellowships may be awarded for a period of two years to those who have a Ph.D. degree. They will carry a contingent grant of Rs 4,000/-.

Under the revised fellowship scheme, the tenure of JRF, SRF and PDF will not be extended beyond the stipulated period of each category.

The value of Research Associateships will also be enhanced from Rs 1,000/- to Rs 1,100/- p.m. in the case of 'A'-category, from Rs 1,200/- to Rs 1,300/- in the case of 'B'-category and from Rs 1,400/- to Rs 1,500/- in the case of 'C'—category. The contingent grant will go up from the present Rs 2,000/- to Rs 4,000/- per annum.

Research Associateships are awarded to outstanding research students and teachers who are adjudged to be capable of taking up research work independently.

Six scientists win Hari Om Awards

The University Grants Commission has named six scientists for its prestigious Hari Om Trust Awards which carry Rs 10,000/- each. Their names are:

1. The Sir C.V. Raman Award for experimental research in Physical Sciences: Prof. Krishnaji, Allahabad University.
2. The Dr. Homi J. Bhabha Award for research in Applied Sciences: To be shared jointly by Prof. R. Narasimhan, Tata Institute of Fundamental Research, Bombay, and Prof. R. Narasimha, Indian Institute of Science, Bangalore.
3. The Dr. Meghnad Saha Award for Research in Theoretical Sciences: Prof. K. Ramachandra, Tata Institute of Fundamental Research, Bombay.
4. The Sir Jagdish Chandra Bose Award for Research in Life Sciences: To be shared jointly by Prof. C.S. Vaidyanathan, Indian Institute of Science, Bangalore and Prof. G.K. Manna, Kalyani University, West Bengal.

These awards are for the year 1976. They were instituted in 1974 with the help of an endowment from the Hari Om Ashram Trust, Nadiad.

UGC assistance for promotion of arts

The University Grants Commission has offered to give financial assistance to universities and colleges for the promotion of performing arts. In a circular letter to these institutions, it has said that assistance can be given for the appointment of instructors for performing arts, including drama. Universities which want to set up Departments of Arts and Culture, including drama, or strengthen their existing departments, should include proposals for this purpose in their Sixth Plan development schemes for consideration by the visiting committee of the Commission.

The assistance for the appointment of instructors will be on the same pattern as that for trained coaches for sports. This provides for 75 per cent funding by the Commission for the first five years as against 25 per cent by the State Government or University concerned, subject to the condition that after this period, the entire expenditure will be treated as committed expenditure.

Personal

1. **Prof. M.N. Rama Sarma has taken over as the Vice-Chancellor of Sri Venkateswara University.**
2. **Dr. D.K. Salunke has been appointed Vice-Chancellor of Mahatma Phule Krishi Vidyapeeth.**
3. **Shri. R.P. Naik has taken over as the Vice-Chancellor of Jabalpur University.**
4. **Dr. B.R. Bhonsle has been appointed Vice-Chancellor of Marathwada University for a second term of three years.**

BANARAS HINDU UNIVERSITY

Advertisement No. 20/1980-81

Applications are invited for the undermentioned posts. The benefit of Provident Fund/Pension, Dearness Allowances, House Rent Allowances and City Compensatory Allowances are admissible according to University rules. The retirement age of University Employees is 60 years. The appointment will be made on two years probation on all permanent posts. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft or Crossed Indian Postal Orders for Rs 7.50 in favour of the Registrar, Banaras Hindu University towards the application fee. Application forms alongwith the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221 005 on receipt of Rs 0.60 paise stamped self-addressed envelope of 23 cm x 10 cm size. Candidates called for interview for these posts will be paid actual Railway fare by the Second Class plus reservation charges for sleeper, if paid, and/or actual Bus fare from the present residence both ways by the shortest route as per University rules. No other expenses will be paid.

Application for each post be sent separately alongwith attested copies of certificates in support of the qualifications and experience mentioned in the application and be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221 005.

Incomplete application in any respect will not be entertained for consideration.

Those who are in service should apply through proper channel. M.O. or Cheque will not be accepted towards the application fee.

For the posts of Lecturers, other things being equal, preference will be given to Scheduled Castes/Scheduled Tribes candidates who are considered fit.

Applicants may send their bio-data alongwith attested copies of all the certificates and details on plain paper alongwith the application fee of Rs 7.50 in Bank Draft/I.P.O. to avoid delay in case they do not get the prescribed form in time.

NOTE: Number of vacancies are tentative and can vary according to needs.

Last date for receipt of application is October 25, 1980.

FACULTY OF ARTS

1. READER IN CHINESE (One)

Grade : Rs. 1200-50-1300-60-1900.

Qualifications : Essential

Good academic record with a Doctorate Degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

About five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding research work.

Desirable

(1) Good knowledge of both classical and modern Chinese, good pronunciation of Chinese with ability to speak the language fluently. (2) Knowledge of Hindi and English.

NOTE: Those who have applied earlier in response to our earlier Advt. No. 1/1979-80 need not apply again.

FACULTY OF ORIENTAL LEARNING & THEOLOGY

2. LECTURER IN JAIN DARSHAN (One)

3. LECTURER IN BAUDH DARSHAN (One)

Grade: Rs. 700-40-1100-50-1600.

Qualifications : Essential

(1) A Doctor's Degree or research work of an equally high standard; and (2) consistently good academic record with a first or high second class (B in the seven point scale) Acharya Degree in the subject concerned or an equivalent degree of a foreign University.

Having regard to the need for developing inter-disciplinary programme, the degrees in qualification No. 1 and 2 above may be in the relevant subject.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualification prescribed in No. 2 above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for atleast two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's Degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements.

Explanation

Candidates for being eligible for recruitment to the post of Lecturers must have a first or high second class (B in the seven point scale) at the Master's level and for determining High Second Class the mid-point between the minimum percentage of marks fixed by a University for award of Second Division and First Division may be taken and for determining consistently good academic record an average of 55% of the two examinations prior to Master's Degree (irrespective of the marks obtained in any of the two examinations) or 50% marks in each of the two examinations separately.

INSTITUTE OF TECHNOLOGY

Grade: Reader—Rs. 1200-50-1300-60-1900.
Lecturer—Rs. 700-40-1100-50-1600.

4. READER IN ELECTRICAL ENGINEERING (One)

5. READER IN ELECTRICAL ENGINEERING (Spl. System Engineering (one)

Qualifications : Essential (1) Doctorate Degree in the subject or published work of an equally high standard. (2) A first or second class Master's Degree in the subject or an equivalent qualification. (3) About five years experience in responsible position in teaching/research/industry. **Desirable**: (1) Research publications in standard journals. (2) Membership of learned bodies and societies. (3) Experience in teaching Electro-magnetic fields, measurement and instrumentation at under-graduate and Post-graduate level (applicable only for post no. 4).

6. LECTURER IN METALLURGY (five)

Qualifications : Essential: (1) Consistently good academic record with first or high second calss (B+) Master's Degree in the subject or an equivalent degree of a foreign University. (2) Some experience in teaching/research/industry with specialisation in one or more of the following fields: Industrial Metallurgy/Extractive Metallurgy/Mechanical Metallurgy/Industrial Management/Metallurgical Design/Fuels and Furnace Technology. **Desirable**: (1) Doctorate Degree in the subject. (2) Original work as evidenced by Technical publications/project reports in any aspect of Metallurgy. (3) Specialisation in Industrial Management/Metallurgical Design/Fuels and Furnace Technology.

NOTE: Those who have applied in response to our earlier Advt. No. 9/1970-80 need not apply again.

7. LECTURER IN MECHANICAL ENGINEERING (Nine permanent and two temporary likely to be made permanent)

Qualifications : Essential: (1) Consistently good academic record with first or high second class (B+) Master's Degree in the subject or an equivalent degree of a foreign University. (2) Some experience of teaching/research industry. **Desirable**: (1) Doctorate Degree in the subject.

NOTE: Those who have obtained Doctor's Degree in the subject concerned will also be considered irrespective of the fact whether they have a Post-Graduate Degree in the subject or not.

FACULTY OF VISUAL ARTS

8. LECTURER IN HISTORY OF ARTS (One)

Grade: Rs. 700-40-1100-50-1600.

Qualifications : Essential: (1) Consistently good academic record with first or high second class (B in the 7 point scale) Master's Degree in the relevant subject or an equivalent degree or Diploma recognised by the University; and

(2) Two years research or professional experience *or* evidence of creative work and achievement in his field of specialisation *or* a combined research and professional experience of three years in the field as an artist of outstanding talent.

OR

A traditional or a professional artist with highly commendable professional achievement in the subject concerned.

Desirable: (1) Specialisation in History of World Art i.e. Western Art, African Art, Chinese Art & Pre-Columbian.

9. LECTURER IN PLASTIC ARTS (One)

Grade: Rs. 700-40-1100-50-1600.

Qualifications : Essential (1) Consistently good academic record with first or high second class (B in the 7 point scale) Master's Degree in the relevant subject or an equivalent Degree or Diploma in Pottery or Ceramics (artistic) recognised by the University; and

(2) Two years research or professional experience or evidence of creative work and achievement in his field of specialisation **or** a combined research and professional experience of three years in the field as an artist of outstanding talent.

OR

A traditional or a professional artist with highly commendable professional achievement in the subject concerned.

Desirable: (1) Publication or participation in National or International Exhibition in the subject concerned.

FACULTY OF PERFORMING ARTS

10. PROFESSOR OF MUSIC (Instrumental) (One)

Grade: Rs. 1500-60-1800-100-2000-125/2-2500.

Qualifications: **Essential** (1) First or second class Post-Graduate Degree in Instrumental Music (stringed instruments) of a University or recognised institution with sound knowledge of theory and history of Indian Music and proficiency and reputation in Instrumental Music. (2) A Doctorate Degree (D.Mus./Ph.D.) or published work of an equally high standard. (3) About ten years experience of Post-Doctoral research and/or teaching at a University or College. (4) Ability to guide research.

11. LECTURER IN VOCAL MUSIC (Two)

Grade: Rs. 700-40-1100-50-1600.

Qualifications : Essential (1) Consistently good academic record with first or high second class (B in the 7 point scale) Master's Degree in the relevant subject or an equivalent degree or Diploma recognised by the University; and

(2) Two years research or professional experience or evidence of creative work and achievement in his field of specialisation **or** a combined research and professional experience of three years in the field as an artist of outstanding talent.

OR

A traditional or a professional artist with highly commendable professional achievement in the subject concerned.

Desirable

(1) Doctorate Degree in Vocal Music.

(2) Proficiency as a performer.

(3) Knowledge of theory and history of Indian Music.

NOTE: Those who have applied in response to our Advt. No. 5/80-81 need not apply again.

INSTITUTE OF MEDICAL SCIENCES

Grade: Reader—Rs. 1200-50-1300-60-1900 plus N.P.A. as per rules.

Lecturer—Rs. 700-40-1100 -50-1600 plus N.A.P. as per pules.

12. READER IN PAEDIATRIC SURGERY (One)

Qualifications: **Essential** (1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India. (2) M. Ch. (Paediatric Surgery). (3) Teaching experience as Asstt. Professor/Lecturer in Paediatric Surgery for three years in a Medical College.

Desirable: (1) Research and publications in standard journals.

13. READER IN ANATOMY (Teratology) (One)

Qualifications: **Essential** (1) M.B.B.S. or an equivalent qualification recognised by the Medical Council of India. (2) Post-Graduate Degree in Anatomy viz. M.S., M.Sc., Ph.D., D.Sc. or equivalent qualification. (3) Teaching experience as Asstt. Professor/Lecturer in Anatomy for three years in a Medical College.

Desirable: (1) Research experience and publications in Teratology/Embryology. (2) Experience in teaching Embryology/Teratology.

NOTE: Non-medical candidates with M.Sc., Ph.D., D.Sc. qualification in Anatomy will also be considered.

14. LECTURER IN SURGERY (General) (One)

Qualifications: **Essential** (1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India. (2) M.S. (Surgery)/M.S. (General Surgery)/F.R.C.S./Speciality Board of Surgery (U.S.A.). (3) Three years teaching experience as Tutor/Resident in General Surgery of which one year should be after P.G. qualification.

Desirable: (1) Publications in the scientific journals.

15. LECTURER IN ORTHOPAEDICS (One)

Qualifications: **Essential** (1) M.B.B.S. or equivalent qualification recognised by the Medical Council of India. (2) M.S. (Orthopaedics), Speciality Board of Orthopaedics (U.S.A.) M.Ch. (Orthopaedics). (3) Three years teaching experience as Registrar/Resident in Orthopaedics of which one year should be after P.G. qualification.

Desirable: (1) Publications in scientific journals.

16. LIBRARIAN (One)

Grade: Rs. 1100-50-1600.

Qualifications: **Essential** (1) First or Second Class M.A./M.Sc./M.Com. plus a First or Second Class B.Lib.Sc. or Diploma in Library Science from a recognised Institute OR First or Second Class B.A./B.Sc./B.Com. plus a First or Second Class M.Lib.Sc. from a recognised Institute. (2) At least 7 years experience of working in a responsible Professional / Administrative capacity in a large University Library/Medical Library. (3) Good academic qualification and research experience (with publications).

Desirable: (1) Good knowledge of documentation / bibliographical work and in colon classification system with classified catalouge code. (2) Post-Graduate qualification in Information Science/Journalism. (3) Contribution to Scientific Papers.

17. INCHARGE—ART AND PHOTO SECTION (One)

Grade: Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications : Essential (1) Degree/Diploma in Commercial Art from a recognised School/College of Arts. (2) Atleast ten years professional experience in the field of Medical Art (different types of Charts, Illustrations Booklets, Book-covers) and/or Medical Photography (Colour Photography), Photomicrography & Medical Photography) in a Medical College/Hospital.

Desirable: (1) Publication of illustrations in Books, Journals, Monographs etc. (2) Administative experience of a well established Art & Photo Section.

FACULTY OF COMMERCE & MANAGEMENT STUDIES

18. PROFESSOR OF MANAGEMENT STUDIES (One)

Grade: Rs. 1500-60-1800-100-2000-125/2-2500.

Qualifications

An eminent scholar with published work of high quality, actively engaged in research. Ten years experience of teaching and/or research. Experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

CENTRAL LIBRARY

19. DEPUTY LIBRARIAN (One)
Grade: Rs. 1100-1600.

Qualifications: **Essential**: (1) First or 2nd class M.A./M.Sc./M.Com. plus a First or Second Class B. Lib Sc. or Diploma in Library Science. (2) At least 7 years experience of working in a responsible professional capacity in a large library. (3) Good academic qualification & research experience (with publications).

Desirable: (1) Knowledge of documentation and bibliographical work. (2) Working knowledge of one or more foreign languages. (3) Knowledge and experience of machine retrieval.

NOTE: Those who have applied in response to our earlier Advt. No. 8/1978-79 need not apply again.

20. PROFESSIONAL JUNIOR (Two)
Grade: Rs. 700-40-900-EB-40-1100-50-1300.

Qualifications: **Essential**: (1) First/Second Class B.A./B.Sc./B.Com. Degree plus first or second class M. Lib. Sc. Degree OR First/Second class M.A./M.Sc./M.Com. Degree plus first/second class B. Lib. Sc. or Diploma in Lib.Sc.

Desirable; (1) Experience of having worked in a large library. (2) Knowledge & experience of Library automation. (3) Experience of documentation work. (4) Proficiency in Colon Classification.

21. PROFESSIONAL JUNIOR (One)
Grade: Rs. 700-40-900-EB-40-1100 50-1300.

Qualifications: **Essential**: (1) M.A. (Sanskrit) First or Second Class or Acharya First or Second Class with English as a subject at the graduation level. (2) B. Lib. Sc./Dip. Lib. Sc. First or Second Class with experience of handling cataloguing and preservation of manuscripts OR 5 years experience of handling, cataloguing and preservation of manuscripts in University or research library.

Desirable: (1) Ph. D. or published research work. (2) Knowledge of *Sharda* and Persian scripts. (3) Extensive knowledge of ancient and medieval Indian authors and their works. (4) Will have to organize the manuscripts section consisting of 10,000 manuscripts mostly in Sanskrit (various scripts) on scientific lines. Will have to prepare a descriptive catalogue of these manuscripts and help and guide the research workers. Also will have to see that manuscripts are preserved properly.

MAHILA MAHAVIDYALAYA

22. LECTURER IN DANCE (One)
Grade: Rs. 700-40-1100-50-1600.

Qualifications: **Essential**: (1) Consistently good academic record with first or high second class (B in the 7 point scale) Master's Degree in the relevant subject or an equivalent degree or diploma recognised by the University; and

(2) Two years research or professional experience *or* evidence of creative work and achievement in his field of specialisation *or* a combined research and professional experience of three years in the field as an artist of outstanding talent.

OR

A traditional or a professional artist with highly commendable professional achievement in the subject concerned.

Desirable: (1) Specialisation in Kathak.

Note : 1. Other things being equal preference will be given to women candidate.

2. In case of selection of women candidates—Willingness to accept the Hostel Duties and residence in the Girl's hostel and charge of extra-curricular activities such as games, N.C.C., Canteen, N.S.S. etc.

3. Those who have applied earlier in response to our Advt. No. 6/1978-79 need not apply again.

INDIAN INSTITUTE OF TECHNOLOGY : DELHI

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Applications are invited for the following posts under Departments/Centres and in area/specialization as indicated below:

Department of Civil Engineering:Professor: Any branch of Civil Engg. Contributions to curriculum development of iab. experiments and manuals and/or through writing of text books preferred.

Department of Humanities & Social Sciences: Assistant Professor: Mathematical Economics.

Department of Mechanical Engineering: Senior Research Assistant (Rs 550-900) Bachelor's degree in Mech. Engg. or Chem. Engg. or 1st Class Master's degree in Chemistry.

Centre for Applied Research in Electronics: Professor: Signal Processing Microwaves & Millimeterwaves. Design Engineer: Electrical/Physics.

Centre for Atmospheric Sciences
Lecturer: Bio-mechanics.

Centre for Biomedical Engineering: Professor, Assistant Professor: Rehabilitation Engineering; biomedical instrumentation; biomedical systems analysis; biomechanics, biomaterials; biophysical applications to biomedical engineering.

Centre for Energy Studies: Chief Design Engineer/Principal Scientific Officer (Rs 1500-2000): Ph.D in Science or Engineering with experience or development work in the field of Solar Energy Utilization.

Centre for Material Science & Technology: Senior Scientific officer Grade I: Building Materials.

Centre for Systems and Management Studies: Assistant Professor/Lecturer: Financial Management; Managerial Economics. Senior Scientific Officer Grade I/II: Management/Economics.

Instrument Design & Development Centre: senior Design Engineer: Mech. Engg. Design. Reprographic Officer: (Rs. 1100-1600) Degree in Electronics or Mech. or Master's Degree in Physics. Minimum of 5 years experience.

MISCELLANEOUS

Senior Physical Training Instructor (Rs 700-1300): Bachelor's degree; second class diploma in Physical education OR second class Bachelor's degree in Physical Education with diploma in sports coaching OR a Master's degree in Physical Education. Experience of 5 years in an Institution of University level.

PAY SCALES & MINIMUM QUALIFICATIONS

A. ENGINEERING & TECHNOLOGY

Professor: (Rs 1500-2500): An eminent Scholar. Ten years experience. OR an outstanding Engineer/Technologist. Assistant Professor (Rs 1200-1900) Good academic record with Ph.D./equivalent research published work or design/development work of high order. Five years experience OR Good academic record with recognised work in industry/professional fields.

B. SCIENCE/HUMANITIES

Professor/Assistant Professor/Lecturer (Rs. 700-1600): Good Master's degree/Doctorate Degree or equivalent published work. Experience 7-10/5/2 years in teaching, research and industry.

Senior Design Engineer, Senior Scientific Officer GradeI (Rs 1100-1600) Design Engineer, Senior Scientific Officer Grade II (Rs 700-1300): Good degree in Engg./M.Sc. Experience 5/2 years.

Others: As indicated at respective places.

Allowances at Central Government rates.

Reservation for SC/ST candidates, as per Govt. of India rules except for Professor & Assistant Professor.

Application form and detailed information can be had from Assistant Registrar (Estt. I) by sending self-addressed, stamped (75 paise) envelope. Last date of receipt of request for application form is **21-10-1980**. Last date of receipt of completed application forms is **29-10-1980** (**12-11-1980** for candidates abroad).

MAHARASHTRA ASSOCIATION FOR THE CULTIVATION OF SCIENCE

LAW COLLEGE ROAD
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Applications are invited for the post of Cytogeneticist (in the scale of Rs. 1100-1600 plus allowances) in the ICAR Coordinated Project for Fruit Improvement at this Institute.

Qualifications: M.Sc. Botany or Agriculture Ph.D. in Cytogenetics and breeding of fruit crops preferably grapes.

Experience: At least five years experience after Ph.D. in horticultural crops particularly grapes as evidenced by published papers.

Applications may please be sent to the Director, Maharashtra Association for the Cultivation of Science, Law College Road, Pune 411 004 upto **25th October 1980**.

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Agarwal, Kusum. Mathematical Models for some transport processes in cardiovascular systems. Kanpur University.

2. Arora, Neelam. Variational formulations for non-linear differential equations and initial value problems. I.T.I., Delhi.

3. Dave, Chandrakant. A study of polynomial systems of two variables. University of Indore.

4. Ghate, Suresh Haribhau. Electrodynamics of turbulent fluid under the influence of Coriolis force with an application to the dynamo theory of stellar and planetary magnetic fields. Nagpur University.

5. Gupta, Ram Sharan. A study of film lubricated bearings. Kanpur University.

6. Joshi, Narotam. Theory of integral transforms and applications in statistics. Kumaun University.

7. Majumdar, Pradip Kumar. Study of first and second degree indeterminate equations (Kuttakara and Varga Prakrti) in India. University of Calcutta.

8. Naveen. Prakash. From DBMS to data base machines. I.I.T., Delhi.

9. Ramana Prasad, V.V. Some problems in the study of dusty viscous fluids. Kakatiya University.

10. Ramesh Chandra. Non-singular relativistic cosmological models with modified cosmical term. University of Gorakhpur.

11. Srivastava, Ramayan Ji. Studies in Finsler spaces. University of Gorakhpur.

Operations Research

1. Bansal, Shri Parkash. On some problems in network and sequencing. University of Delhi.

Physics

1. Alok Kumar. X-ray spectra of some complex compounds. Kanpur University.

2. Awasthi, Kailash Nath. An electron gas model for the lattice dynamics of metals. Kanpur University.

3. Bajpai, Shyam Narayan. Excitation and propagation of magnetostatic microwaves on ferrimagnetic layered structures. I.I.T., Delhi.

4. Bhattacharyya, Asitbaran. Studies on some aspects of VLF atmospherics in relation to different meteorological phenomena. University of Calcutta.

5. Chattopadhyay, Sujit Kumar. Axially symmetric solutions and related problems in relativity. University of Burdwan.

6. Dixit, Jagdish Prasad. Lattice dynamics of solids. Kanpur University.

7. George, Abraham K. Ultrasonic studies in some thermotropic liquid crystals and liquid crystalline mixtures. M.S. University of Baroda.

8. Kandpal, H.C. Energy transfer mechanism in donor acceptor pairs. Kumaun University.

9. Mohammad Salimullah. Nonlinear interactions of electromagnetic waves with plasmas and semiconductors. I.I.T., Delhi.

10. Nirwal, V.V.S. Study of statics and dynamics of rock salt structure of ionic crystals. University of Jabalpur.

11. Saxena, Praveen. Small and large signal noise studies in impatt diodes. University of Delhi.

12. Sharma, Ashok Kumar. Studies in solid state physics: Electronic properties of amorphous and crystalline InSb and InAs thin films. Sri Venkateswara University.

13. Sharma, Jitendra Kumar. Para-Bose operators, coherent states and applications I.I.T., Delhi.

14. Singh. Khaidam Momon. Study of Mossbauer effect in deformed, neutron irradiated and quenched stainless steel foils. University of Calcutta.

15. Thakur, Ram Yatan. Heavily doped semiconductors. I.I.T., Delhi.

16. Venkata Naidu, S. Spectroscopic studies in bio and synthetic polymers. Sri Venkateswara University.

Chemistry

1. Anjaneyulu, Kowluru, Enzyme-substrate modifications and their industrial and biomedical significance. I.I.T., Delhi.

2. Arora, Ram Swaroop. Preparation and chracterisation of some new organometallic complexes of titanium (IV). University of Delhi.

3. Banerjee, Shubhra Bijoy Chandra. Studies in the mechanism and structure of products in Stobbe and allied reactions. Nagpur University.

4. Barpujari, Dinesh. Chemical constitution and fungistatic activity of ortho-mercaptoazo compounds on Aspergillus niger. Gauhati University.

5. Bisht, Ganga. Studies in some problems connected with primordial synthesis of organic compounds of biological significance. Kumaun University.

6. Biswas, Sankar. Dyes as catalysts for some simple reactions. University of Calcutta.

7. Chitgopkar, Vijay Haribhaoo. New method for the investigation of electronic energy levels and theoretical study of the spectroscopic, electrical and magnetic properties of large conjugated systems. Nagpur University.

8. Gupta, Veena, Physico-chemical characteristics of the colour formed during heating of sugars. Kanpur University.

9. Hriday Shanker. Physico-chemical studies on complexes of some metals with safranine and haematoxylin. Kanpur University.

10. Jain, Basanti Lal. Electrochemical investigation of corrosion inhibitors for zinc metal. University of Rajasthan.

11. Jassal, Jagdish Kumar. Graft copolymerization of vinyl monomers onto cellulose and cellulose derivatives. Himachal Pradesh University.

12. Katiyar, Santosh Kumar. Biochemical studies of leguminous seeds. Bundelkhand University.

13. Lal, Altaf Ahmad. Chemical studies on membrane lipids of Hartmanella culbertsoni. Kanpur University.

14. Maji, Bijay Krishna. Kinetics and mechanism of substitution reactions of platinum (II) complexes. University of Burdwan.

15. Malik, Saroj. Studies on azomethane ylides: Synthesis of 2,4, 6-I disubstituted pyridines. Kanpur University.

16. Mathur, Ajit Behari. To study the mechanism of environmental degradation of polyolefins: Polyethylene and polypropylene. Kanpur University.

17. Mehrotra, Gita. Preparation and characterisation of phenoxides of some metals. Himachal Pradesh University.

18. Misra, Mankeshwar Nath. Studies in the quinoline-(P-tolyl) sulphonamide metal chelates. Kanpur University.

19. Misra, Rakesh Kumar. Study of the complexometric behaviour of substituted and unsubstituted phenylthioureas with special reference to 'D' block elements. Kanpur University.

20. Mohammad Museeb Raza. Studies on chemical activities of Salmonella enteritidis. Rohilkhand University.

21. Mondal, Jnanendranath. Kinetics and mechanism of substitution of aquoligands from hexa-aquo-chromium (III) ion by polydentate ligands in water-ethanol mixture. University of Burdwan.

22. Nagpal, Dinesh Kumar. Some studies on ylides and pyridinium salts. Kanpur University.

23. Nirgune, Janardhan Balwant. Studies on the essential oils of some medicinal plants. University of Indore.

24. Pardey, Hari Narain. Some biochemical studies on urolithiasis. Kanpur University.

25. Pandya, U.H. Studies on drug potentials. Saurashtra University.

26. Sadhana. Studies on the transport phenomenon through membranes under non-isothermal conditions. Kanpur University.

27. Saha, Bikas Chandra. Coordination chemistry of molybdenum. University of Calcutta.

28. Saikia, Bhogeswar. Studies in terpenoids. Gauhati University.

29. Sankhuja, Neerja. Thermodynamic and transport studies of some multicomponent solutions. Himachal Pradesh University.

30. Santosh. Radiochemical studies in retention behaviour of chromate and other ionic species on selected ionic solids. I.I.T., Delhi.

31. Seth, Raghu Nath Prasad. Studies on the structure of polysaccharides occurring in seeds of Cassia renigera L. Kanpur University.

32. Shukla, Upendra Kumar. Synthesis of potential anthelmintic agents. Kanpur University.

33. Singh, Chandra Pratap. Studies on metal carbonyls and their substituted derivatives. University of Gorakhpur.

34. Singh, Raj Kumar. Chemical and biochemical studies in the maintenance of pregnancy during protein deficiency. Kanpur University.

35. Suri, Susheel Kumar. Studies on olefination reactions with ylides. Kanpur University.

36. Thanki, R.J. Studies on chromatography. Saurashtra University.

37. Vishwa Prakash. Studies on the inter-relationship of chemical constituents of local and hybrid varieties of Oryza sativa as affected by intake of nitrogen, phosphorus and micro elements. Rohilkhand University.

Earth Sciences

1. Bal, Ruby. Structure and petrology of the Deccan traps around Chhindwar, Madhya Pradesh. University of Calcutta.

2. Prabhakara Rao, Pilli. Mineralogy and geochemistry of green and ruby mica pigments from Saidapuran Pondalakuru Region, Nellore Precambrian belt, Andhra Pradesh. Andhra University.

3. Rajendra Prasad, Putury. Geological, hydrological and geoelectrical characteristics of Tammileru Basin. Andhra University.

4. Satya Kumar, Mulukutla, Geoelectrical and hydrological investigations on miocene Rajahmundry sandstone of the Godavari Valley, Andhra Pradesh. Andhra University.

Engineering & Technology

1. Bommareddi, Venkateswara Reddi. Growth kinetics and superconducting properties of Nb_3 Sn and V_3 Ga synthesized by solid state diffusion. I.I.T., Delhi.

2. Dembi, Narayan Ji. Flow boiling of R-22 in plain and wire screen fitted tubes. I.I.T., Delhi.

3. Gill, Bhagwan Singh. Flow through radial vaneless diffusers. I.I.T., Delhi.

4. Krishnaiah, Udipi Anantha. Numerical methods for differential equations with periodic solution. I.I.T., Delhi.

5. Navin Chand. Investigations on the structure of polymers and fibres through dielectric relaxations. I.I.T., Delhi.

6. Qamare Hasan. Finite element analysis of fluid flows at low and moderate Reynolds numbers: Applications to blood flow. I.I.T., Delhi.

7. Sagar, Rakesh. Studies in open and closed die forging operations. I.I.T., Delhi.

8. Saini, Swami Piara. An experimental and theoretical study of the phenomenon of fatigue crack closure and its effects on fatigue crack propagation in thin metallic sheets. I.I.T., Delhi.

9. Sharma, Prem Chand. Mechanics of axisymmetric closed-die cold forging process. I.I.T., Delhi.

10. Sharma, Subodh Chandra. Analysis of reinforced concrete structures for torsion. University of Rajasthan.

11. Sudhir Chandra. Properties of RF plasma grown Al_2O_3 Al insulators on silicon and effect of plasma annealing on thermally grown SiO_2 films. I.I.T., Delhi.

12. Vikal, Ramesh Chandra Das. Vibration isolation using viscoelastic damping. University of Bihar.

BIOLOGICAL SCIENCES

Anthropology

1. Kamali, M.S. Bio-anthropological profiles of the people of South Iran. University of Poona.

2. Kenue, Ravinder Kumar. Human chromosomal heteromorphisms: Types and frequencies among Jats of Delhi. University of Delhi.

3. Kshatriya, Gautam Kumar. A morpho-genetic study of two mendelian isolates—Kolis, a tribe and Rajputs a caste—of district Panchmahals, Gujarat. University of Delhi.

Biochemistry

1. Kulkarni, Ashok Balkrishna. Brain acetylcholine metabolism in malnourished rats. M.S. University of Baroda.

2. Kulkarni, Vinayak Wasudeo. Studies on some biochemical changes during growth, development, and ripening of guava fruit, Psidium guajava L. with special reference to the enzyme pectinmethylesterase. Nagpur University.

Microbiology

1. Patel, Kanubhai Antolbhai. Role of pigment in bacteria on phage bacterium interaction. M.S. University of Baroda.

Marine Biology

1. Jayasree Nair, G.R. Studies on Lernanthropidae. University of Kerala.

2. Kuttalingam, M.D.K. Studies on certain aspects of some marine fish and fisheries of India with special reference to food and feeding habits. *D. Sc.* University of Kerala.

Botany

1. Abdul Sattar. Studies on stolon and root rot disease of Japanese mint (Mentha arvensis L. Sub sp. Haplocalyx var. piperascens) and its control. Kanpur University.

2. Bose, Bandana. Regulation of protein metabolism in maize seedlings by environmental factors. University of Gorakhpur.

3. Dikshit, Anupam. Fungitoxic evaluation of some plants and the active product (cedrus oil). University of Gorakhpur.

4. Ghorai, Animesh. Chromosome complexes in certain members of the family Gramineae. University of Calcutta.

5. Hajra Ghosh, Nikhil, Studies on effect of X-rays and chemical mutagen on rice, Oryza sativa Linn. University of Burdwan.

6. Goel, Pradip Kumar. Comparative limnological studies in the littoral zone of non-polluted and polluted freshwater reservoirs around Jaipur. University of Rajasthan.

7. Harbans Kaur. Embryological studies in the family Convolvulaceae. Kanpur University.

8. Kulshreshtha, Kalpana. Studies on post infection changes in metabolism of Luffa aegyptiaca Mill and Luffa acutangula Roxb-brought about by water melon mosaic and squash mosaic viruses. University of Gorakhpur.

9. Negi, Kalam Singh, Special composition, mass, structure and nutrient relation of an oak-forest. Kumaun University.

10. Nigam, Ravindra Kumar. Experimental studies on effects of induced cytomorphological changes and growth regulators on growth and flower sex in Canabis sativa Linn. Kanpur University.

11. Pandey, Hema. Germination behaviour, growth analysis and nutrient value of certain introduced grasses at Nainital. Kumaun University.

12. Pandey, Surendra Nath. Correlative studies on growth and metabolism of duck weeds. Kanpur University.

13. Pandeya, Jai Prakash Narain. Studies in soil microbiology with special reference to litter decomposition. University of Saugar.

14. Poranki, Satya Gandhi Raju. Embryological and histochemical studies of some crop plants (Gramineae). Nagpur University.

15. Samual, Bishwombhar Dutt. Genetic analysis of yield and its components in table pea, Pisum sativm L. Kanpur University.

16. Saxena, A.K. Ecology of vegetation complex of North Western catchment oı river Gola. Kumaun University.

17. Sharma, A.P. Studies on the witches 'broom phenomena of the Leguminosae of Rajasthan. University of Rajasthan.

18. Singhvi, Sneh. Production of sapogenins, steroidal alkaloids and some other products from in vivo and in vitro tissue cultures of some solanaceous and compositive plants. University of Rajasthan.

19. Srivastava, Shashi Kant. Study of mycoflora of some cultivated fields with special reference to decomposition of litter of wheat and paddy. University of Gorakhpur.

20. Tewari, Uma. Studies on moulds from cattle feeds and their biological activity. Kumaun University.

Zoology

1. Dasgupta, Sikha. Studies on the components and food uptake with special reference to amino-acids of some nematodes inhabiting different sites of vertebrate hosts. University of Burdwan.

2. Dharpure, Shanta Ram. Studies on the gametogenesis and fertilization in four species of digenetic trematodes. University of Jabalpur.

3. Guha, Dilip Kumar. Taxonomic studies of a few genera of Chironominae (Chironomidae, Diptera) from West Bengal. University of Burdwan.

4. Juneja, Charan Jeet. Haematological studies of fishes with special reference to the effect of water pollution of the blood and haemopietic tissues. University of Rajasthan.

5. Kalpana Murthy, P. Studies on some aspects of host-parasite relationship, immunity, diagnosis and chemotherapy in experimental filariasis. Kanpur University.

6. Kushwaha. Meera. Studies on the morphology and histology of the digestive tract of Polytela gloriosa (Lepidoptera: Noctuidae) and certain aspects of its physiology. Kanpur University..

7. Mehta, Kulnit. Cytological and enzymological studies on the female reproductive organs of certain birds. University of Rajasthan.

8. Midya, Trilochan. A study on the meiosis and spermiogensis in some vertebrates. University of Burdwan.

9. Mukhopadhyay, Pranabes. Taxonomic studies on Indian Laemophloeinae (Cucujidae: Coleoptera). University of Burdwan.

10. Narsaiah, J. Ecological studies of four different (polluted and unpolluted) water fauna in Warangal District. Kakatiya University.

11. Narula, Laxmi. Interaction between pineal and photoperiod on neuroendocrine regulation of reproductive cycle in male Indian weaver bird. Pioceus philippinus. University of Delhi.

12. Pande, Tapati. Studies on the relation between soil and its mesofauna with emphasis on mites (Acare) in the Himalayan and Sub-Himalayan ecosystems of West Bengal. University of Burdwan.

13. Prati Pal Singh. Experimental studies on some chemotherapeutic and immunological aspects of primate malarial parasite, plasmodium knowlesis. Kanpur University.

14. Sethi, Satendra. Studies on the effect of a single implant of steroid on lactating rats and their offsprings as well as on lactation in women. Rohilkhand University.

15. Shah, A.K. Taxonomic studies on the Dermaptera of Nainital region and biology of Forcipula trispinosa. Kumaun University.

16. Shail Bala. Studies on the role of follicle stimulating hormone in spermatogenesis in the albino rat. University of Delhi.

17. Singh, Rameshwar Prasad. Radioprotective effect of 2-MPG on certain tissues in mice after irradiation. University of Rajasthan.

18. Sinha, N.K. A contribution to the study of Indian wild life. University of Jabalpur.

19. Srivastava, Harish Chandra. Study on natural history and external features of a diptern fly, Cyclopodia sykesii Westwood (Diptera: Schizophora: Pupipara: Nycteribiidae) with special reference to the anatomy and histology of the alimentary canal and reproductive organs. Kanpur University.

20. Tazim Hamid. Studies on the bioecology of thrips (Thysanoptera) infesting some fruit trees in the Kumaun Hills. Kumaun University.

21. Upadhyay, J.C. Studies on the gonads of a fresh water teleost, Barilius bandelistis (Ham). Kumaun University.

22. Vikram Singh. Studies on sunn-hemp caterpillar, Utethesia pulchella Linnaeus (Lepidoptera: Arctiidae). University of Rajasthan.

23. Yadav, Banwari Lal. Effect of some antifertility agents on the reproductive organs of female albino rats. Jiwaji University.

Medical Sciences

1. Gambhir, R.S. A cellular approach on the macro-molecular mechanism of some psychotomimeties and drugs producing stereotypes. University of Rajasthan.

2. Godbole, M.M. Comparative study of iodine metabolism in sporadic goitre and endemic goitre as seen in Northern India. A.I.I.M.S., Delhi.

3. Mitti Mohan, S. Study of hypothalamic monoaminergic pathways related to the copulatory behaviour in the male rats. A.I.I.M.S., Delhi.

4. Roy, S.K. A study of events in early gestation and control of implantation. A.I.I.M.S., Delhi.

5. Roychaudhuri, Syamal. Tole of induced bacterial infection in tumor immunity. University of Calcutta.

Agriculture

1. Bharad, Govind Marotrao. Studies of irrigation scheduling, nitrogen and row spacing on growth. yield, quality and consumptive use of sugarcane. Punjabrao Krishi Vidyapeeth.

2. Bhutani, Ram Dhan. Screening and diallel study for yield and quality characters in tomato, Lycopersicon esculentum Mill. Haryana Agricultural University.

3. Borikar, Subhash Trimbakrao. Genetic analysis of resistance to Atherigona soccata rondani in sorghum. Marathwada Agricultural University.

4. Chaturvedi, Janardan. An enquiry into the level of adoption of inputs for increasing the productivity of wheat and rice crops in Ballia District of Uttar Pradesh. Kanpur University.

5. Chhillar, Balbir Singh. Investigations on aphid resistance in barley. Haryana Agricultural University.

6. Dudhani, C.M. Study on the linking roles of extension supervisors, subject matter specialists and research workers. University of Agricultural Sciences, Bangalore.

7. Gunasekaran, P. Mechanism of resistance development to fungitoxicants in fungi. Haryana Agricultural University.

8. Gupt, Shyam Lal. Productivity of capital on small farms in Development Block, Soraon District Allahabad. Kanpur University.

9. Gyanendra Pal Singh. Studies on salt tolerance in onion. Allium cepa L. Haryana Agricultural University.

10. Jain, Dharam Kumar. Genetics of yield components and fibre characteristics in desi cotton, G. arboreum. Haryana Agricultural University.

11. Malik, Brij Pal Singh. Studies on the early diagnosis and correlated response in green gram, Vigna radiata (L) Wilczek. Haryana Agricultural University.

12. Narendra Singh. Studies on floral bud differentiation and blossom biology in khirni, Manilpara hexandra Roxb. Kanpur University.

13. Naskar, Samirkanti. Genetical studies in sunflower, Helianthus annuus L. University of Calcutta.

14. Pitam Singh. Studies in the effect of different doses of N.P. and K fertilizers on the biochemical composition of

potato, Solanum tuberosum L variety Kufri Chandramukhi at different stages of maturity. Kanpur University.

15. Rajendra Prasad. Comparative study of direct sown and transplanted paddy under various methods of land preparation and weed control measures. Kanpur University.

16. Raychaudhuri, Animesh. Studies on mineral nutrition of vegetable crops. University of Calcutta.

17. Satyanarayana. G. Studies on the fruitfulness of grape buds. Punjabrao Krishi Vidyapeeth.

18. Shamsher Singh. Studies on requirement of nitrogen, crop geometry. suitable variety and inter-cropping of sunflower, Helianthus annuus L. Haryana Agricultural University.

19. Suryanarayana Rao, A. Biochemical aspects of seed deterioration in soybeans. Haryana Agricultural University.

20. Tej Singh. Sensitivity of dwarf wheat to plant water deficit at three growth stages. Haryana Agricultural University.

21. Vasuki, M. Studies on the relationship of some soil properties with distribution, extraction, fractionation and absorption of zinc in selected soils of Karnataka State. University of Agricultural Sciences, Bangalore.

Animal Husbandry

1. Dass, Dev Raj. Nutritional studies on various types of calf starters supplemented with different levels of milk intake on the performance of preruminant crossbred calves. Rohilkhand University.

2. Deb, Santosh Kumar. Some fundamental aspects of wound healing in vitamin C deficiency: An experimental study. University of Calcutta.

3. Rehman, M. Effect of some agents used for augmenting reproduction on the endocrine profile in goats. Rohilkhand University.

4. Tewari, S.C. Carrier state of bovines exposed to foot and mouth disease. Rohilkhand University.

5. Verma, D.N. Studies on the availability of microbial proteins to the fuffalo fed by common feed. Rohilkhand University.

ADDITIONS TO AIU LIBRARY

Baldridge, J. Victor and others. *Policy making and effective leadership: A national study of academic management.* San Francisco, Jossey-Bass, 1978. xxv, 290p.

Beeching, Cyril Leslie. *Dictionary of eponyms.* London, Clive Bingley (c 1979) 141p.

Conference of Ministers of Education of Member States of the Europe Region, 3rd, Sofia, 1980. *Development of education in Europe: A statistical review.* Paris, Unesco, 1980. 122p.

———.Education in the Europe region: Trends and future outlook. Paris, Unesco, 1980. ii, 74p.

———.*Unesco's activities in the field of education in the Europe region since the conference in Bucharest, 1973.* Paris, Unesco, 1980. 19p.

Dahama, O.P. and Bhatnagar. O.P. *Education and communication for development.* Delhi, Oxford & IBH Pub. (c 1980) xxiii, 718p.

Edwards, E.G. *Science education and society.* Delhi, Zaheer Science Foundation (c 1977) 26p.

Gagne, Robert M. *Conditions of learning.* New York, Holt, Rinehart & Winston, 1977. viii, 407p.

India, Ministry of Education and Social Welfare. *List of technical and professional qualifications.* Delhi, Author, 1978. 73p.

India, University Grants Commission. *Status of teaching and research in geology and geophysics in India: Report.* Delhi, Author, 1979. ix, 103p.

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UNIVERSITY OF DELHI

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S.N. Mishra
REGISTRAR

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Editor : ANJNI KUMAR

Adult Education As Liberation

Amrik Singh

Despite over a decade of endeavours, adult education is yet to be accepted by Indian universities as a legitimate programme of activity. In 1965 the univrersities established a forum for this purpose and it is known as the Indian University Association for Continuing Education (IUACE). Towards the end of the sixties, the University Grants Commission (UGC) also began to interest itself in this programme. As a result of its financial and other support several programmes have been mounted but none of them has made any significant impact. Approximately two dozen universities have established Departments of Adult and/or Continuing Education. One University has even embarked upon a Master's programme in Andragogy. Here and there colleges too have been drawn into its activities and the IUACE has played some role in stimulating thinking in this direction as well as in initiating certain programmes. The Ministry of Education too, operating through the National Service Scheme (NSS), has taken considerable interest particularly in eradicating illiteracy. The agricultural universities, approximately 20 in number, have a somewhat better record of work in so far as each of them has some extension programme. Even here, however, only half a dozen of them have been really successful; the rest have tried but neither sincerely nor effectively. All these endeavours do not add up to much. The universities on the whole remain as innocent of extension and adult education work as they were, say, a decade ago.

What is the explanation for it? Perhaps more important than anything else it is the nature of the Indian Universities. In one sense the Indian university is like the university elsewhere. It too is concerned with the discovery and transmission of knowledge. It too provides professional education of various kinds up to a fairly advanced level. But while it would be impossible to quantify, not even one quarter of the activity undertaken by the Indian university performs this professional role with any measure of competence and success. The rest of the universities are engaged in what may be described as 'baby-sitting'. Students do not know what to do when they pass out from School. Their school education prepares them by and large for a white-collar job. Jobs in this sector are scarce. Therefore students partly in order better to prepare themselves for those scarce jobs and partly in the absence of any other alternative, go in for tertiary education. They have neither the inclination to profit from this form of education nor the capacity to do so. And since they constitute the bulk of the student population, it is they who set the tone of work in the

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**Secretary, AIU.*

universities and colleges. Were they seriously involved in education, it would be a different matter. Most of them are there in order to pass time, to wait till they can get a degree and become eligible for a job in the open market. There is not attempt at learning new skills. No wonder those who are engaged to teach them are neither expected to possess competence of a high calibre nor are they expected to engage them in any serious pursuit of learning. In a sense it is a classic situation of unwilling learners and reluctant teachers. Both teaching and learning thus degenerate into a hoax, if one may say so.

The State is not averse to spending considerable funds on maintaining this structure. Apart from everything else it keeps a substantial number of persons (approximately 2,500,000 students and more than 150,000 teachers) engaged in an operation that keeps most people occupied, if not usefully occupied. In substance, this large body of teachers is engaged in keeping the approximately two and a half million students out of mischief; it is in that sense that the educational set-up may be described as a baby-sitting operation. That quite often they are unable to keep them out of mischief and that sometimes they also connive at mischief are only subsidiary details. The general pattern is of a pretence at learning. No one takes the pretence seriously and the overall atmosphere is one of irresponsibility and evasion.

Some people would regard this as an over-statement. Perhaps they would describe it as a colourful description of what is at best a prosaic and uninspiring operation. The real issue, however, is not the accuracy of the statement but of the general thrust of the educational endeavour. Knowledge for the sake of knowledge is a rarity almost anywhere. As to India, it can be nobody's contention that the more than two and a half million students that are enrolled in our universities and colleges are there in the pursuit of learning. Not only that, they do not even exert as much as they could to acquire professional skills of a high order. Nor are these skills always at a premium, even in the world of work. If one is working in the private sector one is no doubt required to perform. But if one is working in the public sector nobody insists on performance of a particularly high order. There are happy exceptions and indeed it is they who keep the system going. But the general level of performance is unsatisfactory and this derives, in a great measure, from the attitude of non-performance that characterises the educational system.

It should not have been necessary to say all this in so much detail except for the fact that the apathy to adult education stems largely from this source. In a manner of speaking, the impulse for adult education flows from two inter-related sources. One is the pressure to ensure social justice for all. While it is not so easy for the State to remove other disparities, it surely can and indeed has an obligation to provide compulsory school education to every child. Whatever be the economic situation of a particular individual, when the sate puts him through school and enables him to acquire all those skills which go with good schooling, an important step is taken towards ensuring that no individual is put at a severe disadvantage. Indeed, if only the rich people could afford to buy education for their children and others could not, only the children of the rich would get education.

One notable advance in human history that has occurred during the last two centuries is the fact of increased opportunities for literacy everywhere. In developed countries literacy is almost universal. In underdeveloped countries more and more people are being enabled to become literate though, to be sure, with increasing population the number of illiterates too is increasing. To put it no more strongly, the policy of providing universal literacy, wherever implemented, has been a revolutionary step. Literacy does not ensure equality nor does it ensure absence of exploitation. But it at least ensures, to a substantial extent, that everyone is enabled to acquire those elementary skills without which an individual would neither have dignity nor the capacity to earn anything other than marginal living. One crucial difference between developed and underdeveloped countries is precisely this. In developed countries literacy is almost universal. In underdeveloped countries it is patchy as well as partial. To put it another way, underdeveloped countries will become developed to the extent that they would be able to ensure literacy for everybody.

Secondly, to talk of literacy for every body is only another way of sayng that everybody should be enabled to increase his productive skills. It is increased production which is a precondition for human progress. A good part of this increase in recent centuries has come from man's ability to manipulate nature to his advantage. This ability itself needs to be acquired, and that is what education is about. Literacy is a part of that educational process and leads to increased production. In underdeveloped countries there is not as much concern for increased production as in developed countries. It is the absence of this concern which is as much a symptom of being underdeveloped as the absence of literacy. The two pehnomena are in a sense interconnected.

If an underdeveloped country has a poor literacy rate, it can be safely assumed that the rate of productivity in that country is also low. Which is the cause and which is the consequence of this state of affairs cannot be determined so easily. All that one can say is that both these phenomena are usually found together and reinforce each other. The Indian university today exemplifies this situation to a considerable extent. Most people who enter its portals are primarily concerned with the certification aspect of the university. In other words, they are keen to get a degree or a diploma rather than acquire any worthwhile skills. If in the process they can also add to their productive skills, that is almost incidental or better still, accidental. Were the focus to be on increased productive skills, university education would have been seen as contributing towards this end. But the focus is on certification. Acquisition of productive skills cannot but be a casualty in this situation.

Two further points require to be made in this connection. A small number, however, and they range anything from 5 to 25 per cent, are interested in learning and try to acquire skills of the right kind. It is they who eventually go on to man various jobs that the economy is throwing up. It is they indeed who keep the economy going. Their commitment to acquisition of skills and good performance is neither total nor unqualified. It varies from real honest commitment to doing what is merely required of them. The fact of the matter, however, is that they are sensitive to this dimension of their work and are interested in doing better for themselves, if not also doing well in the job that they have undertaken to do.

The real problem is, and this point is related to what has been said above, about that majority of students who are enrolled in the tertiary sector for no identifiable reason. Since they constitute the majority, they tend to exert a kind of pressure on the educational system which seriously interferes with what the university is basically interested in doing. Acquisition of productive skills or commitment to good performance are hardly matters of any concern to the vast majority. They are there to spend some time in the pursuit of their main objective, which is to get certification to the effect that they have spent a certain number of years in an educational institution and are now eligible for getting the right certificate. This excessive concern with certification almost rules out any attempt at real education. Indifference to acquisition of skills—education, or adult education if we so prefer—is not, therefore, a chance factor. It is an integral aspect of the way the polity is organized. To raise this issue is not only to underline the interdependence of educational and economic policies but also to raise the question whether the economic policies which to a considerable extent determine the educational policies require to be reshaped or not.

HOW A MAN PERFORMS is a matter of considerable importance in a developed country. Wages are high not only because labour is scarce but also because his output is high. The connection between high output and high wages is thus obvious. In an underdeveloped country wages are low partly because labour is found in abundance and partly because output is low. Once again, the connection between the two is obvious. At the same time it should be apparent that the difference between higher and lower productivity is not because of the scarcity or abundance of manpower but because of the difference in the levels of productivity between the two. This difference may derive partly from the input of capital but to a significant extent it is the outcome of the more skilled and the more intensive training that a worker in a developed country has had. He has been taught to be more productive. He knows that in order to retain his job he must perform efficiently; otherwise, someone else who can perform better would be preferred to him. In an underdeveloped country there is no such compulsion except in the sector of organized industry. Elsewhere, whether in the field of services or any other sector, high output is neither expected nor insisted upon. In a manner of speaking, it becomes a low-performance trap in which the economy gets caught.

While the main impulse for breaking out of this trap would be basically political in nature, the educational sector too has an important role to play. As long as those involved in education do not become aware of the supreme importance of better productivity and the skills that go with it, the dominance of those in search of certification would continue. An integral aspect of this line of approach is the utter apathy to the acquisition of skills by those involved in tertiary education in India; that is one reason why adult education is not given the importance due to it. Apart from other things, adult education rests on the assumption that one must learn to be more productive. That is what provides the motivating force. But if productivity is not the thing that is sought, clearly nobody would bother about it and hardly anyone would strive to acquire it. Even within the educational sector there is not that kind of awareness of this basic issue which is indispensable for renovating the system.

A plan for adult education in Indian universities therefore is no more and no less than a plea for renovating the educational system and the economy. That is because adult education is a plea for relevance, for better productivity, for closer interaction between what is done in the classroom and what is done in the world of work. If the university system is so far indifferent to adult education, it is because the system is not performing satisfactorily and is dominated by values that do not put a premium on better productivity. The moment it becomes aware of the need for putting the focus on better productivity and better learning, an internal shift would take place. The briefest definition of that shift would be that adult education would not be regarded as something additional or marginal but as something centrally integral to the process of education.

ONE BASIC DIFFERENCE between education as it is imparted at the school and the college/university level, and adult education is this. Whether at school or at college, more particularly the latter, the focus is on the learner acquiring the knowledge and skill to do certain things. To some extent he also acquires the will to perform the jobs for which he is training himself. But what he does not always acquire, and it is unique to adult education, is the capacity to understand what improved skills can do to increase his earning capacity and, even more important, what his skills can do to him as a person. It is this element of personal growth which gives him a new perspective on life and a new confidence in himself. Indeed, the key element in adult education is the understanding that comes to an individual that he is no longer a victim of things but that he can shape his destiny. There are limitations, of course. These limitations derive from the kind of situation in which he finds himself and his capacity to unbind himself from that situation. But the surge of confidence that is imparted to him by his having outgrown his limitations awakens unsuspected

(*Continued on page 600*)

Problems of Small Scale Industrialists In a Developing Economy

Esogwa C. Osuala

The roadside mechanics in Nigeria form the largest group of the nation's small scale industrialists. They have numerous developmental problems, however. The manner in which they organise and conduct their trades appears to be inimical to future growth, continuity and profitability. Their major constraints are caused by the following factors: limited capital, limited access to loans and apparent unability to amalgamate in order to form bigger organisations.

For quite a long time now, these small scale industrialists have been unable to attract much attention either from the government or from private organisations. However, current events seem to suggest that this situation is gradually changing. Isemin (1978) commended the action of the Kano State Government for its concern over the proliferation of roadside workshops for the repairs of motor vehicles in the nation. In an attempt to regulate the trade of these roadside motor mechanics, the Kano State Government had directed that they must register their workshops with the State's Ministry of Finance. The registration fee was N250 for motor vehicle workshops and N100 for motorcycle workshops. In addition, they were required to display their names and registration numbers on signboards in front of their workshops. The purpose of this measure, according to Isemin, was to identify reputable workshops and distinguish honest motor mechanics from unscrupulous ones.

Viewing the situation from a different perspectives Okam (1979) noted that the roadside motor mechanics play a significant role in the provision of after-sales services for vehicles and cautioned that any government measure that was aimed at regulating the business of these small scale industrialists should be undertaken with great care. It was his view that the roadside motor mechanics are a product of a society dominated by improperly trained traders, contractors, drivers, factory workers and civil servants and their problems should be looked at in a wider context.

As a corollary to Okam (1979), Pita (1978) observed that the roadside mechanics tend to operate as intenerant repairers because they are officially neglected. The fact that they carry out repair works on Mercedes Bez, Volvo, Peugeot, Toyota, Datsun and others is an evidence of their good services to the community. Apart from their generally low motor maintenance costs, Pita (1978) also found that they reduced the congestion likely to have been incurred by the vehicle owners in the garages of the major car dealers.

Aluko (1972) categorised the main obstacles to small scale entrepreneurs as managerial, technical and financial. According to him, the management problem arose from the limited ability of the manager-owner of the enterprise and from the shortage or total absence of provisions for advising him on management problems. The technical problem, he said, arises from (1) owner-manager's inability to purchase modern equipment and from his low technical know-how which were the result of his deficient education and training; (2) his inaccessibility to further sources of finance outside his personal savings; (3) the financial problems which arose from his poor access to loan funds, illiquidity of his operating capital; and (4) in some cases, the indebtedness of his customers to him.

In view of the foregoing observations, Aluko suggested that: (1) deficiencies in the financial and non-financial areas should be taken into consideration in designing polices to assist small scale industrialists, (2) they should be rounded with technical counselling and guidance on selection, utilization of materials, renting and machine leasing should all be provided, (3) management assistance should be given through advice on matters of accounting, budgeting, organisation and personnel management training.

Concluding, Aluko maintained that each apprentice on completion of a training programme should team up with his colleagues or become a partner in an existing unit instead of seeking his own independent unit immediately. Full compliance with this suggestion appears doubtful in the face of the multiple problems facing these workers. The general consensus, however, is that these roadside mechanics play a very significant role in the provision of after-sales services for vehicles which some vehicle dealers in the country do not provide. It is for this reason that the problems of this class of entrepreneurs should be treated with caution and objectivity. They need a well designed programme of training in the form of vocational-technical education if this level of the nation's professional manpower can be developed and maintained.

Manpower development through education is considered very basic to maintaining the socio-economic needs of the society. This view is explicated by Arazu (1978). He explained that Plato saw a close analogy between the human body and human society. According to Plato, the members or organs of the body are like the different social groups that go to make up what is called a State. Each social group has different duties or functions assigned to it by nature just as the different parts of the body

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*Coordinator, Business Education Programme, University of Nigeria.

have their different and natural functions. The purpose of education, according to Plato is (1) to sort out different types of people in a society, (2) to train each class in such a way that it would keep to its natural appointed place and perform its specific functions effectively.

Technical education is described by Nwokedi (1977) as activities which essentially aim at providing skills, knowledges and attitudes required for employment in a particular occupation, group or related occupations, or a function in any field, national economic activity, commerce, public and private sector. He observed that technical education caters for a varied technically differentiated people of any society and guarantees equality of opportunities to youths of different abilities, interests and aptitudes and skills. He noted that in the past, technical education was frowned at and was regarded as education for drop-outs, for people without brains and for the handicapped. This reasoning according to him, emanated from a total misconception of what this type of education meant for any society. He suggested that general education should aim at providing facilities for general and specialised education, effective guidance and proper orientation into a career.

Okam (1979) notes that because there are no really recognised craft associations in Nigeria, apprenticeship training in many trades are unregulated and are generally under a gentleman's agreement. According to him, training is not standardised and skills acquired by trainees are varied and generally low. He points out that even the masters of these trades themselves are not properly qualified in their trades and trainees are only anxious to seek employment if they can be accepted. He found that a large number of tradesmen in Nigeria with ten or more years of experience are unable to pass a class III Trade Test.

Agom (1976) observed that in Nigeria some private bodies have tried to fill the gap in the provision of training schemes for trades such as motor mechanics. He however, regretted that in spite of their worthiness, these training facilities have the following weaknesses: (1) Being profit oriented, the fees they charge tend to be too high while at the same time the young people undergoing such apprenticeship courses are generally subjected to the arbitrariness of the masters, (2) there are no laid-down code of conduct or curriculum for instruction, (3) there is no government agency whose responsibility is to supervise the scheme and (4) hardly does any of them have any minimum standard literacy that the prospective applicant must possess.

The foregoing explains why there is a general consensus that most roadside mechanics do not possess the First School Leaving Certificate and that even if they did, an elementary shool certificate would not equip them with the fundamental principles of science, such as pressure, heat, combustion, expansion etc. which are necessary to the understanding of their trade.

Purpose: It is the intent of this study to examine the previous preparations of the roadside motor mechanics in order to determine their present accommodation problems and future training needs. In addition, the study attempts to ascertain the feasibility for cooperation among these samll scale industrialists.

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The study investigates the issues found in the following research questions:

(1) Do most roadside motor mechanics possess the First School Leaving Certificate?

(2) Do roadside motor mechanics possess any recognised qualifications in their trade?

(3) Is any form of assistance given to these small scale industrialists either by the government or by private organisation?

(4) Is there any desire by this class of industrialists to improve their lot and consequently merge to form partnerships?

Design of the study: The sample was drawn from all over Nigeria. The areas covered by the study were grouped into two zones, Zone A and Zone B. Zone A covered most of the northern States and zone B covered most of the southern States. A total of 652 roadside motor mechanics were covered in the northern states and 1062 in the southern states. Out of the total population of 1714 of this class of small scale industrialists; 271 were owner-mechanics, 220 were journeymen; while 1223 were apprentices. Data on Trade Test (Trade III) syllabus was obtained from the staff of the Federal Ministry of Labour.

Description of treatment: The same questionnaire was administered to all respondents. The questionnaire contained 28 different questions. There were four major areas in which the respondents had specialities. These areas were as follows; (1) Motor Engine and parts repair, (2) Panel beating, welding and spraying, (3) Automobile Electricals, and (4) Vulcanising. Table I below shows the distribution by specialisation.

TABLE 1

Distribution by Specialisation

Type of Job	No. of Respondents
Engine and motor Parts Repair	1011
Motor body Work	497
Automobile Electricals	171
Vulcanizing	35
Total:	1714

Data analysis

In the main, the data dealt with educational and professional qualifications, areas of specialisation, status in the trade, social and financial obstacles, government assistance and control, and desire for further training.

Findings pertaining to research question one: Findings pertaining to the educational qualification of the roadside mechanics do not support the popular view that this class of small scale industrialists do not possess a First School Leaving Certificate. Out of the 1714 respondents, a landslide majority of 1371 or 80 percent of them possessed the First School Leaving Certificate. Surprisingly, only 343 or 20 percent of those sampled did not qualify for the certificate. A remarkable findings, however, was that only four motor mechanics out of the 1914 motor mechanics who possess the First School Leaving Certificate, had any higher academic certificate in addition, thus, making it appear as if the F.S.L.C. was a passport into the trade. Summary data for this responses can be found in Table 2.

TABLE 2

Possession of First School Leaving Certificate

Classification of Responses	Number of Respondents	Percentage
Possess the FSLC	1371	80
Do not possess FSLC	343	20
Total:	1714	100

Findings pertaining to research question two: As might be expected, there is a high correltaion between the absence of training facilities and the number of skill certificates obtainable by the roadside mechanics. Taken together, a majority of the roadside mechanics do not possess any recognized skill certificates. The relevant data in support of this assumption were gathered from the responses given by the respondents on the different trade tests they had passed. The questions were directed to only respondents who had completed their training and were working either as owner-mechanics or journeymen. About 491 respondents were covered in this class. Four skill certificates and their stages were listed. Allowance was also made for respondents to to indicate any other skill certificates which they possessed but which were not among the four in the list. The responses are classified in Table 3.

TABLE 3

Possession of Recognized Qualification

Classification of Responses	Number of Respondents	Percentage
Possess any recognized qualification	211	43
Do not possess any recognized qualification	280	57
Total:	491	100

Two hundred and eleven or 43 percent of the respondents possessed a form of recognised qualifications in their trade. The 280 respondents who did not possess any recognised qualifications formed 57 percent—slightly more than half of the total number of respondents. It is worth mentioning that a reasonable percentage of those who had recognised qualifications obtained them before the Nigerian Civil War indicating that currently efforts to obtain any certificates in the trade have slackened considerably.

Worthy of note from the analysis is the fact that most of those who obtained the recognised qualifications were Panel Beaters, Welders and Sprayers. Classified by grades of certificates, 99 percent of those who have qualified did not exceed Trade Test Grade Two.

Findings pertaining to research question three: To determine the relationship existing between the government and the roadside mechanics, questions were directed to the 271 owner-mechanics covered in the study. Data were classified in two tables: those data which indicated government attention and control were analysed in 4(a) while those data that suggested the reasons for the haphazard location of motor-mechanics all over Nigeria were analysed in Table 4(b). To ascertain the extent of government attention and control, each respondent was asked to react to all the items on the questionnaire, the analysis of which is shown in Table 4(a).

TABLE 4(a)

Government Attention and Control

Indication of attention and control	Responses				Total Respondents
	Yes	%	No	%	
Registration of business premises	46	17	225	83	271
Payment of business tax	8	3	263	97	271
Obtained Government loan	8	3	263	97	271
Allocated workshop space	21	8	249	92	271
Trained by Government	—	—	271	100	271

Responses pertaining to the above table were surprisingly mediocre to poor. However, the highest number of responses were on registration of business premises in which a total of 46 out of 271 respondents had registered their business premises. only 8 percent were allocated workshop space by government. A mere 3 percent had received government loans. 8 respondents or 3 percent paid income taxes. None of the 271 respondents was sponsored in training by the government.

These results were further reinforced by the analysis in Table 4 (b).

TABLE 4(b)

Causes of Proliferation

Suggested causes	Number of Respondents	%	Total Respondents
Lack of money to secure better places	154	9	1714
To be closer to customers	240	14	1714
No special place provided	926	54	1714
Some mechanics live in their workshops	68	4a	1714

A total of 1,714 respondents were each required to choose from a list of four suggested reasons that are responsible for the proliferation of the streets of Nigeria by the motor mechanics. Approximately 54 percent representing 926 respondents agreed fully that lack of special areas for motor mechanics in Nigeria was the cause. All other alternatives were considered relatively insignificant to the problem because less than half of the respondents noted them as reasons for proliferation. Only 14 percent agreed that need to locate near customers caused the proliferation while 9 percent of those covered agreed that lack of money to secure better workshops contributed to the scattered nature of their existence. A negligible four percent were of the opinion that the cause of the problem was the fact that some mechanics use their workshops as a living place as well.

Findings pertaining to research question four: Questions were designed to infer the willingness to merge among the motor mechanics. Contrary to expectation, the unwillingness to merge is generally reflected in the data analysed in Table. 5.

TABLE 5

Desire to Merge

Indicators of Willingness	Yes	%	Total Respondents
Working in partnership now	30	11	271
Joined before but was disappointed	13	5	271
Wishing to continue as a proprietor	240	89	271
Lack of Trust	132	49	271

As low as 30 respondents or 11 percent of the 271 owner-mechanics covered in the study were working in partnership. An astonishing proportion, 89 percent, wished to continue as sole proprietors of their businesses, 13 or 5 percent said they had merged before but were disappointed. Lack of trust was strong as a reason for the predominance of sole proprietorship as more than 50 percent of the respondents agree that this was the obstacle to a merger. Furthermore, it was found that 51 percent of the 271 owner-mechanics belonged to the disbanded Motor and Allied Workers' Union (M.A.W.U.) They were apprehensive about joining any such association in the future since the previous one had failed. From the prevailing negative attitudes of the respondents and from the restrictive structure of the business it was apparent that their willingness to merge was lacking.

Findings pertaining to research question five : To ascertain the extent of government, public, or private help for self improvement of the motor mechanics, the respondents were asked if they had received any more training since completing their apprenticeship, had sat for examinations or had read books about their occupations. They were asked if they needed any further training in their trade if such training were to be arranged by the government. In addition, they were required to choose the training plan they would prefer from a list of possible alternatives, statistics, pertaining to these questions support the view that most motor mechanics would opt for more training on a part-time basis if it were arranged for them.

Less than 50 percent of those surveyed had made attempts at self-improvement in one way or the other. An impressive 57 percent or 977 out of the 1,714 respondents were enthusiastic about participating in occupational improvement training if any such training could be made available. Surprisingly, 35 percent agreed that they had acquired enough skills in their trade and therefore needed no further improvement while an insignificant 8 percent were undecided on the issue. Summary data for this analysis can be found in Table 6(a).

TABLE 6(a)

Desire for Further Training

Response Items	Number of Respondents	Percentages
Yes	977	57
No	600n	35
Neutral	137	8
Total:	1714	100

Those who indicated a desire for further training were further required to choose the type of training plans they would prefer from a list of alternatives. Their responses are shown in Table 6(b).

TABLE 6(b)

Preferred Training Arrangement

Training Arrangement	Number of Respondents	Percentages
Full-Time	332	34
Part-Time	577	59
Any	68	7
Total:	977	100

A stunning 59 percent of the 977 respondents preferred part-time arrangements. Understandably, the married respondents were conscious of their families and the need to preserve their means of livelihood. More than one-third preferred a full-time arrangement while less than 7 percent would be willing to accept any of the training arrangements. If this undecided 7 percent minority were evenly divided for part-time and full-time training arrangement, the part-time arrangement would still maintain an overwhelming majority.

Conclusions and recommendations

One conclusion derived from the results of this study is that the performance of the roadside motor mechanics would be greatly improved if they were provided with adequate space for their workshops, as well as managerial and technical assistance. The coordination of efforts of the various vocational training centres would help to standardise training schemes for motor mechanics.

Other conclusions that can be drawn include the following:

(1) The present structure and preparation of the roadside motor mechanics in Nigeria would be greatly improved if adequate facilities for training are put at their disposal. However, nurgeis among the motor mechanics in Nigeria would neither help to improve their status nor increase their earnings considerably.

(2) Most roadside mechanics would prefer part-time training arrangements in order to stay close and maintain their families.

Special vocational training centres should be set up in Nigeria where motor mechanics can be trained. In addition to providing technical training, such vocational centres should provide instruction in financial management, general record keeping and in public or customer relations.

The government should allocate some portions of land to the mechanics in various parts of Nigeria, to enable them to erect their workshops.

The government should also make loans available to the mechanics so that they can update their equipment and improve their workshop conditions. The government should make it a condition for all motor mechanics to register their businesses in order to facilitate effective control. ☐

Adult Education As Liberation

(*Continued from page 595*)

possibilities in him. Adult education is therefore two things; it is education as generally understood plus a discovery on the part of an individual that he is capable of much more than he believed himself to be.

The focus on the individual is thus integral to the whole scheme of things. In the case of a child going to school, he is being prepared for his adult responsibilities. In the case of an adult, he has either missed the earlier stages of education or had to drop out and is returning to what he should have got in the first instance. In either case the attempt is to sharpen his mind and to equip him with knowledge and skills. In an underdeveloped country, consequently, there is not only a poor literacy rate; there is also lack of emphasis on what an individual can do or accomplish. In a developed country, the endeavour is to get the utmost out of him and this endeavour is best described as 'education'. In an underdeveloped country such an attempt is either not made or made half heartedly and, in any case, without a full conviction of the importance and value of what education can do to the individual. Belief in the worth of the individual therefore determines to a large extent the importance attached to education.

Education has existed in one form or another in all countries and throughout recorded history. Adult education however is a century of so old. It made its appearance in the Western world either when education had become fairly widespread or when it became urgent to impart vocational education to newer and newer segments of population. It is not without significance that adult education as a movement's effective mainly in the Western world. In the rest of the world (which for the most part is underdeveloped) the adult education movement is not yet a force. The movement in its favour has failed on the whole to transcend the limitations of an educational movement. There are happy exceptions though. In countries like Cuba, Algeria, North Vietnam the movement for adult education got merged with the movement for liberation with the result that these countries could both liberate themselves and also launch themselves on the path to development. In the rest of the world the educational or the economic system has not reached that level of development where adult education would be recognized either as a social obligation or as a political necessity. Consequently, adult education continues to be a marginal activity.

There are two ways of looking at this issue. Either one waits for the liberation movement to grow in strength so that it can succeed and pave the way for that phase of social development when, among other things, education becomes a right for everybody. Or, one looks upon adult education as essentially a movement for liberation. By itself this movement may not accomplish the goal of liberation. But there should be no doubt that the struggle for it contributes towards liberation, social as well as economic. Whatever may be its role and character elsewhere, in the underdeveloped world the struggle for adult education is a struggle for liberation. [*Reproduced from New Quest, 1980*]

☐

CONVOCATION

Relevance of Indian Art in Scientific And Technological Advances

India is a tradition bound country, and we are indeed obsessed with our past even in this age of nuclear energy, supersonic speed and conquest of space. Can the two attitudes of reverence for the past and the widening of the frontiers of new knowledge be really irreconcilable? Perhaps not! Even if we tried to brush aside the past and forge ahead into the future, we cannot escape the lingering shadows of all that has gone before as part of a long chain of history. We shall presently see that there is really no conflict between the two ends of the chain. It may sound incredible even to pronounce the very thought, expressed just now.

Marcus Aurelius, the last Antonine Emperor of Rome, who ruled from A.D. 161 to 180, and was a philosopher king, has bequeathed to us a rare gem of a book called the 'Meditations'. In it he has said that 'our lives are what our thoughts make them'. Our sages, without knowing about Marcus Aurelius had said the same thing in their own words:

> "*Yadrisi bhavana yasya*
> *Siddhirbhavati tadrisi*"

Being a thoughtful creature, man, as 'Homo Sapiens', has sought to probe the questions of the origins of life, and to comprehend its purpose, no doubt from the very beginning. This has happened wherever man was lived. And each group of people, according to their thought processes, has evolved a concept of the life process and its aims and has ordered their lives in the work-a-day world accordingly.

The pursuit of this basic knowledge of the very meaning of life may be broadly termed as philosophy. Thus in India there arose six schools of philosophy which not merely conceived of the purpose of life, but devised and suggested means to attain the purpose, giving rise to religious beliefs and rituals. Our lives, from birth to death and all our activities and industries that sustain life with the help of all knowledge at our command, are within the parameters of our philosophies and religions.

While it would be tortuous and also unnecessary, in the present context, to expatriate upon all the philosophies, or the religious injunctions that they gave rise to, or affected them, it would be essential to consider the basic Indian conception of the phenomenon of (a) creation of life, (b) the purpose of it all, and (c) the means to achieve the purpose, as laid down by the *rishis* or *seers* of old.

The basic Indian concept of the creation of the universe was laid down by the seers, and propounded by the Upanishads, as distinguished from the teachings of the Vedic hymns, and was later made explicit by the Sankhya philosophy of Kapiladeva. The conception points to the existence of an imminent and primordial person *par-excellence* called *Purusha* as the cause of the universe, acting in passivity in conjunction with an active female principle called *Prakriti* or Nature. This points to nature as the fundamental creative force. Our ancient lores expound that there are twenty-four basic *tattwas* or elements which are at th eroot of creation. The *Bhagavata Purana*, a work of the 10th century, adds *Kala*, the time eternal, as the twenty-fifth dimension or element to the entire complex.

To analyse these elements: There are first the *Panchabhutas* as the basal elements and are identified as *kshiti* (earth), *ap* (water), *tejas* (fire), *marut* (wind), and *vyoman* (akasa or sky). These basic elements in their turn can be activated by the subjective elements of *buddhi* (intelligence) *ahamakara* (ego), *manas* (mind) and *chitta* (the determinant mind) with the help of the five sense organs, namely, *chakshu* (eye), *karna* (ear), *jihava* (the tongue), *nasika* (nose) and *twak* (skin) and five active organs, namely, *vak* (speech), *Kara* (the two hands), *charana* (the two feet), *medhra* (the generative organ) and *Kayu* (the excretory organ). These are again accentuated by the five sensations of *sabda* (sound travelling through the medium of ether or *akasa*), *sparsa* (the sensation of touch transmitted through the medium of *vayu* or wind, *rupa* (a visual form seen through the effulgence of tejas or fire), *rasa* (the sensation of taste through *ap* or water) and *gandha* or smell transmitted through the medium of the *earth*). And *Kala* (or time eternal), the twenty-fifth element, supervenes them all and fixes the ultimate in parameters of eternity.

The *Upanishads* point to *Purusha* as the *Isvara* or the creator God. He is also delineated at once as the food (or means of sustenance of the universe) and the eater of the food. in the words *aham annam ahamnnadah*. It only uses a symbolism to suggest the oneness of all creation and the identification of the individual component of the creation with the whole, reflected in the reverberating truism of 'Om *Purnamadh*.

> *Purnamidam Purnat*
> *Purnamudachyate*
> *Purnasya Purnamadaya*
> *Purnamevasishyate*

This is scientifically expressed as the molecular aspect of matter or of its composition and that matter can neither be created nor destroyed, through forms may undergo changes. This underscores the basic Indian concept of the absolute identity, in character, of the individual soul (*Atman*) with the universal soul (*Paramatman*). If *Purusha* is held as *ahamannādah*, it only emphasises that the real aim of the creator is to absorb unto it all the components that it creates out of its nucleus. These, therefore, point to the aim of human existence as the attainment of the transcendental and supervening aspect of the Supreme. When this happens existence itself ceases. This state can be attained by attainment of proper knowledge (or *jnānayoga*) and pursuit of action (or *karmayoga*) as expounded in the *Gita*. The *Gita* also says '*Karmani eva adhikāraste mā phabshu kadāchana*' (You are entitled to the ordained course of action but not to its fruits), and Yoga is described as *Karmasu Kusalam* (skill and efficiency in whatever you do), keeping the ultimate goal in view.

It was the *Manusmriti*, a work of the first half of the first millennium B.C., which emphasized the cyclic order of life involving birth, growth and death and rebirth, comparing the process to the rotatory or cyclic movement of the wheel. It also states that it is Brahman who is responsible for this eternal cyclic order.

The *Chhandogya Upanishad* explains that the supreme Being, (call him God, Allah, or Brahman, Supreme or the Absolute, as you will), is the cause of existence and birth, the means of sustenance through life and is the ultimate abode of all creatures.

We find a reflection of this fundamental thought in Wordsworth's opening lines of the poem "*Ode on the Intimations of Immortality*" Trailing clouds of glory do we come from God who is our Home'.

The cyclic process is explained by the Upanishadic statement that the spirit or self of a mortal being goes to the *Chandraloka* (or the realm of the moon). From there, it descends to ether (*ākāsa*). From *ākāsa* it travels to *vāyu* (wind). From *vayu* it goes to *dhūma* (smoke emanating from tejas), and from *dhuma* to *abhram* (or mist). From the mists it descends to *megha* (or the clouds). From *megha* it merges with the waters of the rain, and when they pour it falls on earth and sprouts into grains like rice, barley, beans and sesamum etc or into plants. These in turn are eaten by man and animal for nourishment. They also create the reproductive matter and lead to recreation of the *atmans* of old anew among the eaters of the grains or plants.

In keeping with the teaching of the *Chhandogya Upanishad*, the individual soul at rebirth attains the form or position it occupies by its action in its previous incarnation. The self thus gets the deserved fruit of its *karma* or action. 'As you sow so you reap' goes the common saying. The objective of religion in Indian conception is to obtain liberation from the seemingly endless chain of births and deaths.

All human endeavour is, therefore aimed at the attainment of the merger of the individual soul with the universal through conscious effort which takes one through a cyclic process of birth, life, growth and death, through the nature of our actions or *karma*.

To achieve the objective of life set forth by the different schools of Indian philosophy various means have been recommended by the thinkers and seers. The course recommended most is the hearing of discourses on the nature of the Supreme Being, reflection of the Absolute, and contemplation thereof, which help to turn and orient life towards the Supreme goal. But it is not possible or practicable for all human beings either to understand the apparently abstruse idea or follow the suggested course. Hence, arose the need of an image as a visual manifestation of the Divine to enable one to concentrate on it and seek its grace.

The overpowering aspects of Nature in India had no doubt compelled fear, respect and reverence for them and led to their defication seers had given these sensations, cogent meaning and purpose. The sophistication laid down in and canonized works of art have, therefore, their roots firmly in the traditions of the rituals and rites and visual forms. The assimilation of the beliefs and practices of the deities as the manifestations of the same priomordial *Purusha or Brahman*.

Thus arose in India an art from primarily devoted to religious purpose.

In course of time the principles of art were codified in the *Silpasastras*, or texts on art, which advocated details of aesthetic principles, differences of form, proportion, likeness, three dimensional effect through the interplay of colour and light and shade, reflection of mood and grace, besides definitive iconography to identify the individual deities. The earliest *Silpasastra*, Matsyā Purana, would go back to the 3rd century, but by the 5th-6th centuries, standardization of a high order was advocated in the *Brihatsamhita* and *Vishnudharmottarapurana*, respectively.

It is paradoxical perhaps that though religion was a basic motivation of art with salvation as its aim, there is a good deal or artistic creation in Indian art which was aesthetics-or-delight-oriented, and are not directly or apparently related to religion. The sensuousness reflected by some erotic or voluptuous works of art in varying degrees, perhaps abhorrently sometimes, also induce and promote creative activity and the sustenance of the creations as a part of the scheme of Nature.

The ideal of artistic creation was held out as the creation or *rasa* or *pure* delight through the artistry of skilful artists who combine rhythm, proportion and cadence to produce *chhandas* or rhythmic sympony of the highest order. Perfection in whatever work man undertook was the aim set forth in the texts, though human effort often fell far short of the mark. The rasas, or moods that were imparted to the forms comprise the nine rasas and *delight* or *laughter*, love, *comic heroism*, *fury*, *apprehension*, *compassion*, *horror* and *marvel*, respectively.

"Sculptures, whether of wood, clay, stone or bronze cannot be conceived of as standing by themselves. They are always part of a larger complex of temples, or such other edifices, either as the central cult image or the lateral supportive deities of the entire pantheon or narrative mythological themes connected with the central deity. They have an integrated meaning in the complex where they arise, but now distracted and carried away from their contact and stored for displayed in museums or in private possession, they do not convey the same significance or the integrated story; for their original purpose was architecturally functional, spiritually edifying and aesthetically decorative. The same applies to the murals, that adorn the walls of caves and shrines or palaces or houses".

Thus Indian Art reflects an integration between Nature and life and delights in the delineation of the Divine in his diverse local conceptions of the Divinity and of man as his devotee in the context of the background of earth, waters, sky (heaven), the sun, as the source of light and energy, and the wind as the breath of life. Upon this canvas the various participant members are often personified to indicate their inherent energy and function in the total complex.

Though Buddhism which emerged about the middle of the first millennium B.C., began by denouncing the sacrificial performances of the *Vedas*, eventually it also succumbed to the system of a multiplicity of divinities on the analogy of Brahmanic cults with the Buddha himself as the central figure. The life of Buddha, his previous lives, the previous Buddhas, the Buddha of the future all came with the Kon of the Buddhist pantheon as the themes of veneration and of art.

Even Jainism fell into line with the deification of Mahavira, the twenty-fourth Tirthankara, or pathfinder, as well as of his predecessors about the same time. It also adopted the cult of the mother, the god of wealth, the goddess protecting the welfare of the children or promoting true learning that conduces to the achievement of the eventual emancipation of the soul as in the Brahmanical pantheon.

But with all our advance of science, it is to be observed that nature reigns supreme over man and man is only a 'tiny helpless speck' on this mysterious universe. Has man been able to create life or the nervous system, or control the destiny of man? Has man been able to stop volcanic eruptions, or earthquakes, cyalones, typhoons or tornados, and root out pestilences of the microbes or the viruses? Does man know the nature of the breath of life or the nature of soul or what happens to it at the death of the living being? Has man been able to root out diseases, or stave off old age or perpetuate life? We have indeed only rediscovered the phenomena that already exist in nature, namely, heat, light, electricity and magnetism, X-rays or the laser beams. We have been able to harness them to an extent to make our lives a little more comfortable, but we have not been able to create the five basic elements, of *kshiti*, *aptejas*, *marut* or *vyoman* with all our ingenuity and technology at our command. The smallness and helplessness of man, therefore, becomes apparent in the context of the immense expense and bounties of nature. We have, therefore, to submit ultimately to the 'Inscrutable', call it Nature, the Absolute, Brahman, or God, and, in the dire moment or our misery or need, we have to pray to him for grace and sustenance. We connot indeed see the face of the Absolute, but we seek, nevertheless, to visualize him in the image of man in his varying moods, idealizing him in the process, but always in our role of a supplicant. It is in this context that Indian art becomes relevant. It has now cast its spell on the arts of other countries as well, and given rise side by side secular art, as a mirror of life for the sustenance of life itself and to enable it to fight its battles all the better.

As far back as the 16th century, William Shakespeare, who was bred and fed on Christian thought, expressed through the mouth of the Macbeth, one of the most powerful of human beings, who had very nearly succeeded in achieving his disbolic aim of destroying his opponents so that the might enjoy his own life all the better with power, pomp and pelf. But the spirit of man rose against him, and the burden of conscience and circumstances made him realize the utter futility of the pursuit of self at the expense of moral values. This provides an object lesson for all who dissociate science and technology from our religious beliefs of moral values".

Macbeth lamented thus :
"Tomorrow, and tomorrow" and tomorrow
Creeps in this petty pace,
And all our yesterdays have lighted fools
The way to dusty death.
Life's but a walking shadow, a poar player
That struts and frets his hour upon the stage
And then is heard no more ; it is a tale
Told by an idiot, full of sound and fury.
Signifying nothing'

The concept of the Divine is an invisible and as abstract as the concept of Government or State. The state no doubt becomes visible in the police constable and the tax-collector. Likewise the Supreme Principle becomes visible in the image, whatever shape or name we may give to it. By common consent, and through many trials and errors, we have given it an artistic form. We have done this so that it can at once evoke or compel respect, reverence, love and fear, so that we may not forget or override the supreme which we cannot comprehend, fathom nor conquer and go astray. There is, however, no inherent conflict between one religion and another, because the aim of all religions is nearly the same, only the rituals differ. This was demonstrated by Shri Ramakrishna Paramahmasa who spoke of the unity of God. He also said that all paths lead to Him, though some are tortuous, some are not. The devotion to images arose out of the cult of *Bhakti*, which brought man in a personal relationship and communion with the Divine. Hence the images, which have come down to us, incidentally as works of art. Those who can and do conceptualize or visualize the divinity or the Supreme or the Absolute or the Inscrutable in the abstract may continue to do so and offer their supplication to the Supreme as best as they may. Must they, therefore, look down upon those who concretize their conceptions in the idealized image of man, the spirit that permeates the images and appreciate its aesthetic impulses as well? Lord Jesus Christ, the son of God, appeared on earth as his messenger, but in the familiar and credible form of a common man. Since art, by and large, provokes the mind, and renders it contemplative and transmits sensations of edifying and ennobling delight, it has to be accepted even for its aesthetic merits, leaving aside any religions impulses or sensations, by all and sundry, regardless of their faiths or faithlessnesses. Indian art today, thanks to the untiring efforts of E.B. Havell, Ananda Coomaraswamy, and Stella Kramrisch, has received its proper measure of appreciation in the world, and is in high demand from all over the globe, and has been increasingly comprehended for its significance and relevance.

It was Sir Phillip Gibbs who expressed most significantly and poignantly his sense of chagrin and grief at the use of death-dealing bombs from the air towards the close of the 1st World War. He lamented that by the use of the bomb from the air mankind had at once risen very high and fallen very low. One wonders what he would have said regarding the devastation of Hiroshima! But public memory is short and provides a solace and a cushion for the irrevocable course of events.

Do I sound as a prophet of doom? The writings on the walls of the times show where the powers that be are leading us and what use they are making of scientific and technological advances.

Is it not time to think of Him, who says 'I bear the burden of those who steadfastly contemplate on me and offer to me their devotion.'

Is there no hope of redemption from the chaos to which we are heading with all our wits around us and all our knowledge of science and scientific discoveries and technologies?

> *"Hope springs eternal [in human breast*
>
> *Man never is, but always to be blesst"*

Young Wordsworth had sung outgin ecstacy at the threshold of the French Revolution of 1789 when the cries of "Liberty" "Equality" and "Fraternity" had rent the skies of the world as under.

> *"Bliss was it in that dawn to be alive,*
>
> *To be young was very heaven"*.

We may say the same thing now in the Modern Age of Science, if not of Reason, for the world belongs to the brave and the future belongs to the youth.

To catch up again with the cyclic order of events and Nature and seek solace from it, we may say 'If winter comes can spring be far behind? [*Excerpts from the convocation address delivered by Dr. N.R. Banerjee, Director, National Museum, at the Indian Institute of Technology, Bombay*].

Personal

1. **Dr. M.K. Rout has taken over as the Vice-Chancellor of Utkal University w.e.f. 14.9.80.**
2. **Dr. R.S. Mishra has been appointed Vice-Chancellor of Meerut University.**
3. **Shri P.P. Srivastava has been appointed Vice-Chancellor of Himachal Pradesh University.**
4. **Prof. B. Ramachandra Rao, Vice-Chairman, UGC, has been elected President of the National Academy of Sciences, Allahabad.**
5. **Dr. D.H. Goswami has been awarded the degree of Doctor of Philosophy by Gauhati University on his work on university administration in North East India. He has rejoined as the Registrar of Dibrugarh University w.e.f. 27.9.80.**
6. **Dr. Bholendra Singh has taken over as the Registrar of Kashi Vidyapeeth w.e.f. 22.9.80.**
7. **Shri S.B. Patil has assumed the charge of the post of Registrar of Marathwada University w.e.f. 24.9.80.**
8. **Dr. Khem Singh Gill, Dean of the College of Agriculture of the Punjab Agricultural University has been elected a fellow of the Indian National Science Academy.**
9. **Dr. P.S. Sidhu, Assistant Professor of Soils of the Punjab Agricultural University has won the 'Australian Society of Soil Science Publication Medal' for the year 1979.**
10. **Dr. H. Hari Babu, Reader in Physics, Osmania University, attended the Sixth International Conference on Crystallography held at Moscow recently and presented two research papers on Growth, characterisation and defect properties of mixed alkali halide and dihalide crystals.**

CAMPUS NEWS

Indian Academy of Parasitology inaugurated at Hyderabad

The Vice-Chancellor of Osmania University, Prof G. Ram Reddy, inaugurated the Indian Academy of Parasitology at Osmania University recently. He called for more interaction between various sciences for better results. He congratulated the Academy for having eminent members from different parts of the country. Dr. S. N. Singh, Professor Emeritus of the University, presided.

Prof. P. Narayana Rao, President of the Academy, said the Academy has achieved a lot in one academic year by bringing out the first issue of the proceedings of the Indian Academy of Parasitology in the form of a Journal. He said the publication of the journal was a long-felt need of parasitologists in this part of the country. He said Osmania University was a leading centre of parasitology and the Journal aimed at integrating both applied and pure sides of parasitology.

Prof. Shyam Sunder Sinha, Secretary of the Academy and the Editor of the Journal, said the first issue got good response from young researchers from all over the country. He hoped it would continue to get more. He described Prof. Singh as a leading parasitologist who was responsible for the subject's growth in the University.

The Vice-Chancellor who also released the Journal stressed the need to maintain high standards. He hoped the Journal would avoid duplication in research work and help in faster advancement of the science.

Second book fair

The Second Delhi Book Fair will be held from 14th to 23rd November, 1980 at Pragati Maidan (New Complex). For the first time, only Indian publications will be displayed at the Fair including those published in regional languages covering all the fields of Humanities, Social Sciences, Physical Sciences and Applied Sciences. This will provide an opportunity to teachers and students to have a glance at all the titles at one place.

NSS girls camp at Gorakhpur

A ten day camp of the girls unit of National Service Scheme of the Gorakhpur University was organised at the Harijan Colony in Gorakhpur. The girls started cleanliness drive and completed their target of making the whole Harijan Colony clean. They distributed free milk to children and impressed upon women to keep their children neat and clean. The campers were also given regular lessons in Yoga.

M. Phil course at Gorakhpur University

Gorakhpur University will be offering M. Phil course in Psychology from the current academic session. The introduction of M. Phil course had become necessary to bridge the gap between Masters degree and Ph.D. degree due to the gradual lowering down of the standards of the former. The course structure stresses active participation in learning by students, objective evaluation of their progress and preparation for efficient teaching and research. The students passing out this course shall have better job prospects and will be able to compare favourably with their counterparts from other Universities of the country. Those holding a Masters degree in Psychology will be eligible for the course.

Fifty scholars attend ICHR seminar

Presiding over the valedictory function of the Indian Council of Historical Research seminar organised by the Department of Ancient Indian History, Culture and Archaeology, Panjab University, Prof. B.R. Grover, Director, Indian Council of Historical Research, New Delhi spelled out the facilities given to the researchers by the ICHR for the development of historical studies. The three-day seminar was attended by 50 scholars and researchers from different universities of the country.

Mr O.P. Bhardwaj's paper on 'restoration of geographical names in medieval India' identified Ludhiana with ancient 'Ailadhana' mentioned in the Ramayana. Dr L.P. Pandey of Himachal Pradesh University, Simla, read his paper on 'Development of Horticulture in the 11th and 12th cenutries in India' and said that botanical science was in a developed state in these centuries. In his paper on the 'Social picture of Kashmir in 11th and 12th centuries AD' as depicted in Rajatarangini of Kalhana, Mr Ashwini Agarwal, revealed the caste system, the status of women, beliefs and superstitions. Mr Ashwini further observed that when the Mohammadans were making continuous efforts to conquer India, the Kashmirian society was at its lowest ebb and least bothered about nationnal interests. The famous historian, Dr B.C. Sinha, traced the origin and development of Ganesh cult in ancient India. In his paper on the royal patronage to Buddhism during the 11th and 12th centuries, Prof. Jagan Nath Agarwal emphasised that the royal patronage was always there, and thus, the hitherto advanced arguments regarding the lack of official support to it, was completely falicious. Dr Satya Parkash's paper: "Social life in Rajasthan during the 11th and 12th centuries' gave a brief survey of the castes, family life, marriage ceremony, position of women—their dress and ornaments and also about the festivals in Rajasthan during the 11th and 12th centuries. Dr Sudhakar Pandey in his paper. "Representation of the Ganga and the Yamuna in Indian art in the 11th and 12th centuries AD" expressed his view that the sculptural representation of these rivers is found first of all on a Mohenjodaro seal. Dr M.S. Ahluwalia of the Himachal Pradesh University, Simla, highlighted that the land grants made over to the Rajaputras were in lieu of performing military services. Dr D.C. Bhattacharya of the Panjab University dwelt upon the social perspective of the 11th century Buddhist iconography.

Alcohol-blended fuel perfected by Delhi IIT

The research conducted at the Indian Institute of Technology, Delhi, and the extensive experiments have proved that alcohol can be used with great advantage in automobiles, scooters and motorcycles in the form of alcohol-gasoline blend without any major modification of the engine. Alcohol will not only solve the problem of fuel oil scarcity but also considerably reduce the increasing air pollution due to vehicular exhaust emission. The optimum blend gives six to eight per cent more power, consumes three to five per cent less fuel and exhaust emits much less carbon. The alcohol blend also keeps the engine cool and ensures a much smoother operation than that obtained with gasoline. The blend has been denatured to prevent the misuse of its alcohol content by giving it a distinct colour and odour.

Use of alcohol as fuel for engines used in heavy vehicles like trucks and buses has also been tried. Field trials have shown that carburation of alcohol in heavy-vehicular diesel engines can increase their peak power by 20 to 50 per cent, reduce exhaust smoke density and significantly increase the thermal efficiency of the engine. The main advantage of using alcohol is its availability from agricultural waste, farm waste, industrial waste, molasses, tropical grass and various other raw materials.

Bio-medical research institute

The West Bengal Government will set up an institute of bio-medical research on human reproduction, the first of its kind in the eastern part of the country.

Gynaecological, pathological and biochemical aspects of this branch of science would be investigated at this institute. For the time being the institute would be located on the campus of the SSKM Hospital, and its constituent units would be set up in the different medical colleges of Calcutta. The Health Minister, Mr Nani Bhattacharyya, will be the chairman of the institute. Mr Bhattacharyya said that the Indian Council of Medical Research and the World Health Organisation would provide funds for the research work.

He further said that initially about Rs 5 lakhs would be spent. Dr Sushanta Sarkar, Director of the Institute of Post Graduate Medical Education and Research, would serve as the head of this institute.

Hyderabad seminar on science and technology

To coincide with the silver jubilee of the formation of the Andhra Pradesh State, the Andhra Pradesh Akademi of Sciences organised a seminar on science and technology—challenges in eighties in the conference hall of National Geophysical Research Institute in Hyderabad. The Vice-Chancellor of the University of Hyderabad, Prof. B.S. Ramakrishna, inaugurated the seminar and Mr M. Gopalakrishna, Education Secretary delivered the opening address.

Desai wills his savings to Vidyapeeth

The former Prime Minister, Mr. Morarji Desai, has bestowed his entire life's savings to Gujarat Vidyapeeth. Mr Desai who has been the Chancellor of the Vidyapeeth for the past several years made this provision in his will.

Rs. 3.5-lakh grant for research to Dr Sharma

The Department of Science and Technology of the Union Government has sanctioned a grant of about Rs 3.5 lakh to Dr A.P. Sharma. a Reader in the Department of Physics, Kurukshetra University for his research work on glass detectors (solid state nuclear track detectors).

The research work on glass detectors for the detection of heavy ions, fission fragments and super heavy nuclei is said to be the first discovery of its kind in the country. The glass detectors have better potentialities of heavy ion change estimation than other detectors.

CSIR raises stipend for research fellows

The Council of Scientific and Industrial Research has decided to increase the amount of stipend and contingent grant for its research fellows and associates from November 1.

The monthly stipend of junior research fellows is to be raised from Rs 400 to Rs 600 and that of senior research fellows from Rs 500 to between Rs 700 and Rs 800. Research associates will get Rs 1,100-1,500 a month as against Rs 1,000—1,400 at present. Contingent grant for all research scholars has been doubled.

News from Agril. Varsities

National seminar on agricultural marketing at PAU

Dr Amrik Singh Cheema, Vice-Chancellor of the Punjab Agricultural University said in Ludhiana that with the introduction of new farm technology in agricultural phenomenal, increase had no doubt been recorded on the production front but owing to inadequate complementary adjustment in the marketing system, the gains of the increased production has not been fully conserved. He further said that the marketing infrastructure particularly in regard to transportation, storage and processing, had not been able to cope with the growing requirements. As a result the farming community was deprived of remunerative prices for their produce and the consumers had also been unable to get their food products at reasonable prices.

Dr Cheema was inauguarating a National Seminar on Agricultural Marketing and Training. The Seminar which had been jointly organised by the Department of Economics and Sociology of PAU and the Food and Agriculture Organisation (FAO) was attended by more than 50 delegates from all over the country. The main objective of the Seminar was to create interest in agricultural marketing training and to solicit support from various universities, Government Authorites and other agencies.

Dr Cheema emphasised that there was an imperative need to impart appropriate training in agricultural marketing at the higher, intermediate and lower levels to push up the tempo of marketing efficiency in agriculture. This type of training should be complemented by refresher courses of four to six weeks duration, he added.

In his presidential address, Dr A.S. Alwan, FAO Representative in India, said that though India had achieved spectacular achievements on the production front under the impact of technological advances, yet due to the lack of complementary adjustment in marketing technology strains on marketing systems has been vastly accentuated. To meet this challenge, there was a dire need for agiricultural marketing training improvements. Dr Alwan further said that it was necessary to introduce more practical training in agricultural marketing. Dr Alwan stressed the need for the establishment of a National-Level Agency which could promote the development of an efficient agricultural and food marketing system for which he assured every help from the FAO.

Dr A.S. Kahlon, Chairman of the Agricultural Prices Commission, said that there should be more research on agricultural marketing at the Agricultural Universities. He suggested that the PAU should start an agricultural marketing extension programme.

New crop varieties released

Punjab Variety Approval Committee. which met under the Chairmanship of Mr Pritam Singh, State Director of Agriculture recently, has approved DWL-5023 variety of wheat, RLM-514 variety of *raya*, Hara Bona variety of peas and Ageta-112 variety of guara for general cultivation in the State. All these varieties have been developed by the Punjab Agricultural University.

DWL-5023 is a high-yielding double-dwarf durum variety with an average plant height of 90 cm. Its clums are stiff and resist lodging. It has high tillering capacity. It is resistant to yellow and brown rusts and completely free from loose-smut and Karnal bunt diseases. Its grains are bold, hard and lustrous. It yields 22 quintals per acre. Due to its excellent grain character, it is suitable for macaroni purposes and has a good scope for export to other countries where this type of wheat can fetch higher price. It can also benefit the farmers of the State by earning premium price in the market over the existing bread wheats. This new variety has also been identified for cultivation in the entire northern planes by the All-India Coordinated Wheat Programme.

RLM 514 variety of Raya is a medium tall variety suitable for cultivation both under rainfed and irrigated conditions. Its seeds are dark black and bold with an oil content of 41.5 per cent. It matures in about 152 days. Being early in maturity, it escapes damage from late frost and *Alternaria* blight. Its average yield is 7 quintals per acre. This new variety would replace the old RL-18 variety which was recommended for rainfed conditions only. On the basis of its better performance, this variety has been included in the national-level trials during this *Rabi* season.

Hara Bona variety of peas is early-maturing. Its plants are dwarf, erect, vigorous and dark green. It starts flowering three weeks after sowing and its first picking is available about seven weeks after sowing. Its pods are medium, long, dark green and well filled. Its yield is 26 quintals per acre.

The new Ageta-112 variety of guara has been recommended for Bhatinda, Faridkot, Ferozepur and Sangrur districts of the State. It matures in 100 to 110 days. It is comparatively resistant to diseases. Apart from fodder, it is also suitable for vegetable purposes. It possesses higher grain gum percentage than the existing standard variety Guara 111. It yields about 8.6 quintals of grains per acre.

Randhawa seeks better deal for farmers

Dr M.S. Randhawa, has pleaded for a better deal for the farmer. He said the modern farmer was not an illiterate man but a technologist who understood the use of fertilisers and agricultural machinery. He deserved to be encouraged to end the malaise in the agricultural sector.

Delivering the Silver Jubilee Commemoration Medal (1979) lecture at the Indian National Science Academy he lauded the attainment of self-sufficiency in food. He made a special reference to Punjab, where the progress in food production had been most remarkable. The green revolution in the State had no parallel in the history of agriculture, he added. The subject of Dr Randhawa's lecture was "The Green Revolution in India: Progress, Problems and Prospects."

He gave the credit for the green revolution in the country to the high-yielding dwarf wheat strains from Mexico. The yield potential of these strains was as high as 60 quintals per hectare against 38 quintals of the best of the indigenous tall wheat varieties. He laid stress on the use of chemical fertilisers and farm machinery for raising the production of foodgrains. In Punjab alone, the consumption of fertilisers had shot up from 10 kg per hectare in 1966-67 to 29 kg in 1968-69.

Quoting from a study by the National Council of Applied Economic Research, he said the negative effects of farm mechanisation were more than neutralised by its positive gains—more efficient farming and better standards of living. He pointed out that the green revolution had taken place mainly in States like Punjab, Haryana, Rajasthan and Uttar Pradesh because they had a good number of tractors. If Punjab had not got 80,000 tractors, there would have been no green revolution in the State, he added. Dwelling on the problem of storage of foodgrains, Dr Randhawa hailed the Centre's proposal to encourage the construction of godowns in the rural areas. He suggested the building of metal bins in large numbers and godowns in the focal villages under the Integrated Rural Development Programme. This would enable the growers to realise better prices through deferred sale of their produce. He also underlined the growing need for cold stores and refrigerated vans for fruit and vegetables. On the issue of procurement prices for wheat and rice, Dr Randhawa sounded a note of warning. He said the policy of incentive prices for foodgrains must not be whittled down if the green revolution was to be sustained. He advocated the world price level for the country's farm produce. "Our farmers are using inputs which are in no way inferior," he argued. He urged the Government to formulate a national wage policy for agricultural labour to end the disparity in the wages being paid to the tillers of the soil in various States.

New rice strains being developed by IARI

Senior scientists at the Indian Agricultural Research Institute are of the view that the rice-wheat-moong combination may turn out to be the best round-the-year cropping pattern for the entire Indo-gangetic belt of the country. The great merit of this cropping pattern, according to Dr H.K. Jain, Director of the institute, is that it will not only take the foodgrains production in India to a new high but will also put more cash into the hands of the farmers than customary cash crops can. The pre-conditions are that there must be assured irrigation facilities, proper agronomic practices should be followed, and the farmers should go in for the new, high-yielding varieties of paddy which combine good yield with the softness of texture and the taste which make for consumer preference.

The chief rice breeder, said that hundreds of varieties are available and one may take in hand at the start only a few, pass the final tests of good yield, high quality and resistance to disease. The varieties which pass the test here are then sent to the various regional stations of the institute in different parts of the country to see how they behave in different agro-economic conditions. Either simultaneously, or sometimes as a subsequent operation, the new varieties are sown in farmers' fields in operational research areas. If a variety passes the test all along the line, it is released for general use. The four varieties which are now fairly on the way to final aceeptance are Pusa 150, Pusa 167, Pusa 169 and Pusa 205. Researchers are keen that the duration of the paddy crop should also be cut down. The traditional Indian paddy takes about 140 days to be harvested. This delays the sowing of the next crop wheat and other rabi crops and thereby lowers their per acre yield. The four new varieties named above are meeting this test too, apart from the test of yield, quality and resistance to disease.

Another thrust of the research going on at IARI is to develop rice breeds which can be sown directly like any other crop, instead of first growing seedlings, then transplanting them into puddled fields. Direct seedling of rice is not unknown but the yield is so low that farmers go in for the transplantation system where possible.

Dr Rajat De, head of the agronomy division of the IARI and Dr Rajendra Prasad, professor of agronomy, explained how a new range of agronomic practices were being perfected, involving the increasing use of indigenously developed additives to chemical fertilisers, pesticides and insecticides.

Dr Jain said that the great advantage of the Indian land mass in general and of the Indo-Gangetic belt in particular, was that it provided for better solar energy interception by the canopy of the crop during the growth period. Other favourable factors were good irrigation potential whether surface or from groundwater sources, and extensive levelled alluvial sandy loam to clay loam soils. At the institute experimental plots had given to tonnes of paddy per hectare while the average farm yield ranged from two to three tonnes. The gap between the actual and potential yield could be covered, given the effort in the right direction.

Swaminathan pleads for low-risk farming technology

Dr M.S. Swaminathan, Planning Commission Member said that the Indian farmer, with his poverty, illiteracy and small holding, needed a high-yield crop and low-risk technology. The technology needed to be ecologically sound, economically viable, energy-saving and employment intensive. He was delivering the Dr G.V. Chalam Memorial Lecture at the Tamilnadu Agricultural University recently. Dr Swaminathan said food production, which was around 130 million tonnes during 1979-80 would, it was hoped, rise to about 152 million tonnes in 1984-85. He said under the national water plan, 25 million hectares would be added to the 15 million hectares under irrigation by resorting to inter-basin transfer of water. A beginning was programmed to be made during the sixth Plan in peninsular India.

Dr Swaminathan wanted every State to draw up an ecological security plan. Tamilnadu should take immediate steps to restore the Nilgiris eco-system, as the destruction of nature there had reached alarming proportions. He said the food-for-work programme, which was taken up on an ad-hoc basis would now form part of the regular five-year Plan schemes under the integrated rural development programme.

More efficient use of rainwater suggested

More efficient use of rainwater through watershed management, revival of the tank system and the building up of a chain of ponds to hold the rainwater were some of the recommendations made by a symposium held under the auspices of the Indian National Science Academy in New Delhi. The symposium suggested that the 80's should be declared a decade of water management.

Dr V. Ramalingaswami, President of INSA, in his presidential address said despite efforts to bring in more areas under irrigation, three-fourths of the area in the country depended on rainfall for crop production. He, therefore, felt that management of rainwater held the key to agricultural production.

Dr J.S. Kanwar, convenor of the symposium suggested a strategy for rainwater management to increase yields and stabilise production on the drylands.

Dr M.S. Swaminathan, Member, Planning Commission, who inaugurated the symposium, stressed that an understanding of the natural resources and their inter-relationships was essential to evolve a pragmatic plan of action to increase food production. He wanted the States to set up crop weather watch groups to study the behaviour of the rainfall every year and plan future course of action in crop management under rainfed situations. They could also suggest any mid-season correections required for standing crops.

The symposium recommended the concept of watersheds, consisting of a few hectares to a few hundred hectares as a unit for planning, collection and recycling of water. Rainwater can provide maximum benefit to dryland farmers both through surface water storage and through acquifer recharge. In the next 10 years, a necklace of ponds should be provided for the Shivaliks and Himalayas and a large number of ponds on red and black soils for flood and sediment control.

Use of community pond water for high water requirement crops, like paddy and sugarcane should be generally discouraged.

Computer for HAU

The Department of Mathematics and Statistics of Haryana Agricultural University has been equipped with a Rs 15-lakh computer which has the capacity to do a million mathematical calculatons per second. Dr D.P. Srivastava, Dean of the College of Basic Sciences and Humanities, said that the computer would be of great help to research students who had to go to the Computer Centre at the Indian Agricultural and Science Research Institute in Delhi for data analysis.

News from UGC

Stipends for SC/ST & and LL.M

The University Grants Commission is to award 25 postgraduate scholarships to students from border hill areas belonging to Scheduled Caste/Scheduled Tribes and other backward communities. The areas comprise the territorial jurisdiction of (a) Lahoul Spiti, (b) Chamba, (c) Rural areas of Poonch & Rajouri Districts (d) Ladak District, (e) Nagaland, (f) Tripura (g) Almora, Tehri Garhwal, Chamoli, Uttarkashi and Pithoragarh, (h) Manipur, (i) Meghalaya, (j) all the four districts of Sikkim, (k) Bhutan, (l) Mizoram and (m) Arunachal Pradesh.

The value of the scholarships for post-graduate studies (M.A./M.Sc.) is Rs 250 per month, tenable for the normal duration of the course subject to a maximum of 2 years. In addition, the scholarship carries a grant for purchase of books, incidental expenses and expenditure on travel etc.

The scholarships are open to persons below the age of 25 years with a Bachelor's degree in the first division or a good second division with at least 55% marks or B in the grade system, or B in the seven point grade system, and who intend to persue their postgraduate studies in Science, Humanities and Social Science subjects.

The University Grants Commimission has also decided to award 50 scholarships of Rs 250/- per month each for full-time LL.M. studies during 1980-81. The scholarship will be tenable for the duration of the course subject to a maximum of two years.

10% of the scholarships are reserved for candidates from the scheduled castes/scheduled tribes.

Commonwealth academic staff awards

The University Grants Commission has invited from the Vice-Chancellors of the universities, nominations of university and college teachers for consideration for Commonwealth Academic Staff Awards—1981-82.

The nomination forms have also been sent to the universities. The Commonwealth Academic. Staff Awards would enable promising staff members in the universities and colleges to obtain appropriate teaching and research experience by working in similar institutions in U.K. for periods of one academic year or more where considered necessary. Since only nominations made by the Vice-Chancellors of the universities in accordance with the provisions of the scheme, would be considered interested teachers are requested to contact the Vice-Chancellors of their universities for the purpose of getting their nominations made to the University Grants Commission. Only cases of teachers duly sponsored by the universities, will be considered. Others need not apply.

Fellowships for SC/ST

To ensure optimum utilisation of research fellowships by Scheduled Castes (S.C.) and Scheduled Tribes (S.T.) candidates, the University Grants Commission has decided that fellowships, which are reserved for them by the universities but remain unfilled will revert to the Commission for being awarded directly.

At present, 10% of the fellowships awarded by universities are reserved for S.C. & S.T. students. In addition, 50 Junior Research Fellowships, 20 Senior Research Fellowships and 20 Research Associateships are awarded directly by the U.G.C. every year to S.C./S.T. candidates.

The value of the followships has been increased by Rs 200 to Rs 300 with effect from October 2, 1980.

Science & Technology

Importance of Photochemistry

Photochemistry is concerned with reactions which are initiated by electronically excited molecules. Such molecules are produced by the absorption of suitable radiation in the visible and near ultraviolet region of the spectrum. Photochemistry is basic to the world we live in. With sun as the central figure, the origin of life itself must have been a photochemical act. In the primitive earth conditions radiation from the sun was the only source of energy. Simple gaseous molecules like methane, ammonia and carbon dioxide must have reacted photochemically to synthesize complex organic molecules like proteins and nucleic acids. Through the ages, nature has perfected her machinery for the utilization of solar radiant energy for all photobiological phenomena and providing food for the propagation of life itself. Photobiology, the photochemistry of biological reactions, is a rapidly developing subject and helps the understanding of phenomena like photosynthesis, phototaxis, photoperiodism, photodynamic action, vision and mutagenic effects of light. In doing so it tries to integrate knowledge of physics, chemistry and biology.

The relevance of photochemistry also lies in its varied applications in science and technology. Synthetic organic photochemistry has provided methods for the manufacture of many chemicals which could not be produced by dark reactions. Moreover, greater efficiency and selectivity of these methods have an added advantage. Some examples of industrially viable photochemical syntheses may be mentioned here: (i) synthesis of vitamin D_2 from ergosterol isolated from certain yeasts; (ii) synthesis of cubanes which are antiviral agents; (iii) industrial synthesis of caprolactam, the monomer for Nylon 6. (iv) manufacture of cleaning solvents, insecticides and halogenated aromatics (used as synthetic intermediates) by photochlorination; and (v) synthesis of antioxidants by photosulphonation.

Photoinitiated polymerization and photopolymerization are used in photography, lithoprinting and manufacture of printed circuits for the electronic industry. The deleterious effect of sunlight on coloured cotton fabrics is of everyday experience, the worst sufferers being window curtains. The light absorbed by dyes used for colouring the fabric initiates oxidative chain reaction in cellulose fibres. This causes the tendering of cotton. Similar deploymerizing action is observed in plastic materials. Researches are going on to find suitable colourless chemicals which when added to dyed materials or plastics will take over the excitation energy and divert it to non-destructive pathways. These are known as energy degraders or photo-stabilizers, e.g. *o*-hydroxybenzophenones.

The photophysical phenomena of fluorescence and phosphorescence have found varied applications in fluorescent tube lights, X-ray and TV screens, as luminescent dials for watches as 'optical brighteners' in white dress materials, as paints in advertisement hoardings which show enhanced brillance by utilizing fluorescence, for detection of cracks in metal work, for tracing the course of river through caves, as microanalytical reagents, and so on.

Certain chemicals change their colour, that is, their absorption characteristics, when exposed to suitable radiation and reverse when the irradiation source is removed. These are known as photochromic materials. A well known example is the spiropyrans. Their use in photochromic sunglasses is obvious. But they have found application in information storage and self-developing self-erasing films in digital computers also. It is said that a company experimenting on such photochromic memory used UV light for writing the information, green light for reading it and blue light for erasing it. Unfortunately organic substances usually lack the stability for very large unmber of reversals.

Another revolutionary application of electronically excited molecular systems is in laser technology. Lasers are intense sources of monochromatic and coherent radiation. From their early development in 1960 they have found wide fields of application. They have provided powerful tools for the study of diverse phenomena ranging from moonquakes to pico-second processes of non-radiative decay of excitational energy in molecules. The intense and powerful beam of coherent radiation capable of concentration in a tiny point is used for eye surgery, cutting metals, boring diamonds, as military range finders and detectors, and many such applications. The advent of tunable dye lasers has increased the possibility of their application in science and technology.

A further impetus to the study of photochemical reaction has been provided by the energy crisis. This has initiated researches into the conversion and storage of solar energy processes which plants carry out so efficiently. Solar energy provides a readily available source of energy, especially in those countries which lie between the tropics of cancer and capricorn. In these areas, the daily incident energy per square kilometre is equivalent to 3000 tonnes of coal. If suitable photochemical reactions are discovered and devices for proper utilization of this abundant source of energy perfected, half the world's energy problem might be be solved. Solar batteries working on the principle of photovoltaic effects is one such device. For basic researches in these fields, the understanding of various photophysical and photochemical processes is essential. The fundamental study of excited states of molecules is exciting by itself. Short-lived energy states with nano and pico-second reaction kinetics have led to the proper understanding of chemical reactions, modes of energy transfer and the intricate structure of matter. Flash photolysis and pulsed laser photolysis are newer tools for the study of higher energy states. Now it is possible to excite individual vibronic levels or isotopically substituted compounds by using appropriate beams from tunable dye lasers.

[*Courtesy* : *Book Talk*]

Department of environment envisaged

A high-powered committee headed by the Planning Minister, Mr Narain Dutt Tiwari, has proposed that a department of environment which will be responsible for all aspects of ecological protection and improvement would be established. This department would be under the direct charge of the Prime Minister.

A Central land use commission will form the nucleus of the department, which will also be directly responsible for the country's biosphere reserves. The department's main function will be to monitor the pollution of air and water and suggest remedial measures from time to time.

The new department should be organised on the lines of the Department of Atomic Energy, with its secretary also serving as the Chairman of the Central Land Use Commission, the committee is understood to have proposed. One of the first tasks of the new department would be to set up suitably empowered and staffed river basin boards to guide and supervise the planning and execution of integrated programmes for each constituent catchment of a river basin.

Among other priority responsibilities of the department, will be the drawing up of a perspective master plan for the optimum management of the country's total land and water resources over a period of 25 years so that it may become possible to identify critical areas of importance for priority treatment before a point of no return is reached. One such area is the Himalayan ecosystem which must be restored to health if we are to avoid certain disaster. The new department, must also give priority attention to the creation of an informed public opinion on environmental matters and to the mobilisation of voluntary local support for programmes for environmental amelioration.

Science & technology centre in India soon

A Science and Technology Centre for non-aligned and developing countries will be set up in the country soon. A decision in this regard has been taken years ago, according to Mr. K.K. Bhatnagar, Joint Secretary of the External Affairs Ministry. Mr Bhatnagar was inaugurating a workshop in 'Methods of exploration techniques for minerals' under the Technical Co-operation among Developing Countries (TCDC) scheme of the United Nations Development Programme.

Mr. Bhatnagar said that India's technical co-operation with the developing countries was older than U.N.D.P. itself. He said that much co-operation would come easily to India as it would help the developing countries.

U.N.D.P. Resident Representative Mr. J.P. Tuyser stated that India had set apart 10 per cent of United Nations Developing Programme allocations to it for technical co-operation among developing countries activities. He said that under an "Umbrella Project" signed by U.N.D.P. and India 5.3 million dollars were earmarked for the purpose. He said the U.N.D.P. was also considering a proposal submitted by the Government of India seeking assistance to strengthen the National Geophysical Research Institute which was hosting the first workshop of its kind in the country.

Prof Ramanathan one of the founding fathers of Geophysical Research in India and Mr. Hari Narayan, Benaras Hindu University Vice-Chancellor stressed the need for mutual cooperation between developing countries.

Prof. Bhaghavantham complemented the N.G.R.I. for locating ground-water sources in 6,000 villages. He said it was safer, more expeditions and less wasteful to use technologies in and equipment developed in a developing country than those from developed countries.

Dr (Mrs.) M. Vannucci, Senior Programme Specialist of UNESCO in New Delhi said developing countries jump from inefficient to efficient technologies was often inhibited by lack of know-how, funds or alternatives. This led to a vicious circle-inefficient system leading to poverty and poverty preventing change over from inefficient, wasteful technologies which developing countries could ill afford.

Research institutes restored to CSIR

The Union Government has decided to restore four research institutes to the Council of Scientific and Industrial Research. They are the Central Fuel Research Institute, Dhanbad; the Indian Institute of Petroleum, Dehra Dun; the Central Road Research Institute, New Delhi, and the Central Building Research Institute, Roorkee.

The Government has also asked the special committee of the CSIR to quickly review the question of retransferring to it three museums and 10 research associations. The three museums are: Birla Industrial and Technological Museum, Calcutta; Visvesariya Industrial and Technologial Museum, Bangalore and Nehru Science Centre, Bombay. The 10 associations are: Ahmedebad Textile Industries Research Association, Ahmedabad; Textile Research Association, Bombay; Silk and Art Silk Mills Research Association, Bombay; Wool Research Association, Bombay; South India Textile Research Association, Coimbatore; Indian Jute Industries Research Association, Calcutta; Automotive Research Association, Pune; Indian Plywood Industries Research Institute, Bangalore; Cement Research Institute of India, Ballabhgarh and Indian Rubber Manufacturers Research Association, Bombay.

News from Abroad

Technical training responsibilities for British Council

Britain's Minister for Overseas Development Mr. Neil Marten has announced that the work of TETOC (the Technical Education and Training Organisation for Overseas Countries) is to be taken over by the British Council from April 1981.

TETOC is active in many countries, including India. It is used by the Overseas Development Administration (ODA) in Britain for professional advice on technical education. TETOC recruits staff, facilitates institutional links, and arranges training courses in Britain and overseas. TETOC's involvement with India has been particularly with schemes to boost coal output and electricity generation. Its main activities have been the training of thermal power-station operators and maintenance personnel, and the development of mechanised longwall mining, using British equipment but with the ultimate intention of manufacture in India.

A TETOC adviser also participated in a management seminar in Delhi mounted by the Central Electricity Authority and British Electricity International which was attended by senior power personnel in India. Other activities have included advising India's Oil and Natural Gas Commission on training of diving specialists and the on collaboration between U.K. institutions and the Indian Institute of Technology, Bombay, on offshore engineering.

British co-operation in UPSC reforms

Five British specialists will be visiting India to take part in workshops in Bangalore and Nagpur on UPSC (Union Public Service Commission) examination reforms. Their visit is sponsored by the British Government development cooperation programme in India, and their arrangements are being looked after by the British Council. The specialists are: Dr. J.G. Houston and Mr. J. Francis of the Associated Examining Board, Aldershot; Dr. Denis Gibbs of the London Hospital; Mr. John Deakin, formerly of the British Council; and Professor A.C. Bajpai of Loughborough University. The workshops are part of a UPSC project to improve efficiency. As part of this project, the British Government has already given two optical mark readers worth £60,000 (about Rs. 10.8 lakhs) to UPSC. The machines have been installed by Mr. R. Stone of APT Electronics Ltd., Berkshire. They are used to transfer candidates' answer sheets onto magnetic tape for computer processing. Each machine can process 3,000 forms an hour.

Sports

NIS to finance rural sports meets

The National Institute of Sports, which conducts the All-India Rural Sports Meets, has decided to grant financial assistance to the States and Union Territories for holding competitions at the block, district and State levels prior to the national meets. For conducting meets at the block or taluka level the N.I.S. will provide Rs 200 per block or taluka. For district-level competitions Rs 1,000 will be granted by the N.I.S. Each State will get a grant of Rs 3000 for conducting State-level meets. In the case of smaller States and Union Territories, the gtant will vary between Rs 500 and Rs 1,500.

Meanwhile, the Ministry of Education and Culture has simplified the procedure for the settlement of accounts in order to make it easier for the States and Union Territories to utilise the funds for lower-level competitions. The States and Union Territories have been directed that they should inform the N.I.S. of the block, taluka or district meets they are likely to hold during 1980-81. They have been further directed to conduct competitions in kabaddi, kho-kho, wrestling and archery at the lower level. Similarly competitions in athletics, hockey and basketball should be completed by November at the lower level. The national-level meet in these games are scheduled to be held in Hazarbagh (Bihar) in the middle of December. The national-level meet in foot-ball, volleyball, and gymnastics will be held in January 1981. The States and Union Territories have been asked to conduct their lower-level meets by the end of December.

The State Sports Councils have been requested to initiate action for holding the lower-level meets for the timely selection of the teams for participation in the all-India meets. The Sports Councils have also been asked to inform the N.I.S. of the venues and dates of the lower-level meets to enable the N I.S. to send observers. The Sports Councils have been asked to approach the Health Department to earmark a suitable doctor to carry out the medical examination of the boys and girls participating in the State and national meets.

Asiad cell for NIS

A new Asian Games Cell of the NIS will be set up in New Delhi. Mr R.L. Anand, Director, NIS, said in Delhi that the Cell will look after the various developing projects of the Asian Games. It would function under the guidance and charge of an Assistant Director with a small group of officials under him. The Cell would be established either in the Lodi Road complex where a new stadium was being erected or at the National Stadium.

Sports Council suggests smaller squads

The All-India Council of Sports which met in Bombay recently has suggested that the Indian contingent for major international events should be limited in size and restricted to those carefully selected on the basis of past performances and good coaching. At the same time the Council appreciated that a large number of competitors had been sent to Moscow to expose them to international competition in view of the 1982 Asian Games to be held in Delhi. The Council was of the view that the number of doctors and masseurs accompanying the contingents should be adequate. Several steps for improvement of standards in various disciplines like utilising the services of good coaches, systematic coaching and acquiring sophisticated equipment were also recommended. The Council felt that the improvement of national standards in different disciplines was dependent on proper selection, training and motivation of sporting talent at the State and district levels. The State sports and state level associations had a major role to play in this regard. To promote mass participation in sports, the Council suggested regular holding of competitions at various levels leading upto the national level. The President of the AICS, Field Marshal Manekshaw was authorised to hold discussions with various national sports federations to ensure that a suitable programme is worked out and implemented on these lines.

Awards & Medals

INSA Awards

Four distinguished scientists have been awarded for their remarkable contributions in the field of science by the Indian National Science Academy. The recipients of the awards are as follows :

Dr B.P. Pal, a noted agricultural and biological scientist, has been awarded the Aryabhata Medal for 1980 for his outstanding work in environmental planning.

The Bashamber Nath Chopra Lectureship went to Dr A.G. Datta for his contributions in the field of biological oxidation mechanism.

Dr Sukh Dev was awarded the Vishwakarma Medal for his work in the field of natural products.

Dr M.S. Randhawa has been awarded the Silver Jubilee Commemoration Medal for 1979.

One lakh award for Prof. Ramalingaswami

The first Rameshwardasji Birla Smarak Kosh Award of Rs 1 lakh has been awarded to Prof. V. Ramalingaswami, Director-General of the Indian Council of Medical

Research for his work in the fields of protein calorie malnutrition and endemic goitre. The award has been instituted to be given to Indians working in India in medical and related fields.

Prof. Ramalingaswami is also the recipient of the Leon Bernard Foundation Award and the Jacque Parisot Lectureship of the World Health Organisation. He is also the holder of a honorary doctorate from the Karolinska Institute, Sweden.

Prof. Ramalingaswami is also admitted as foreign associate of the National Academy of Sciences, USA. He has also been awarded the Shantiswarup Bhatnagar Award of the CSIR and the Silver Jubilee Research Award of the Medical Council of India. His main preoccupation is the study of major health and nutritional problems affecting the Indian masses. His pilot study of goitre in the Kangra Valley has been carried out over a period of 18 years covering a population of 10,000 and is ranked among the classic examples of contemporary preventive medicine.

Yashpal awarded Marconi fellowship

Prof. Yash Pal, Director of the Indian Space Application Centre has received a 25,000 dollars award for his contribution to space technology. He was handed the Sixth Marconi International Fellowship by Australia's Governor-General, Sir Zelman Cowen at the Opera House in Sydney. The fellowship was founded in 1974 by a daughter of Italian radio pioneer Guglielmo Marconi and was underwritten by 30 companies in various countries.

Prof. Yash Pal was honoured for his work in adapting satellite television for the instructional and educational benefit of villagers in northern India. He is planning to use his Marconi prize to write a book on science communication and development.

Menon will be next INSA chief

Prof. M.G.K. Menon, Secretary, Department of Science and Technology and Director-General of the Council of Scientific and Industrial Research, has been elected President of the Indian National Science Academy for the year 1981-82 at the 46th annual meeting of the Academy held in New Delhi. He will however, assume office after the anniversary general meeting of the Academy in Varanasi on January 2, 1981.

More NCERT scholarships

The National Council of Educational Research and Training (NCERT) has announced the award of 19 more scholarships under the National Talent Search (NTS) scheme. Of these ten students have completed Class X and the other nine Class XII. This is in addition to the 481 NTS scholarships awarded last month. About 80,000 students had competed for the scholarships at an examination held in May this year.

From the year 1981, the NCERT will award 50 additional scholarships exclusively for students belonging to scheduled castes and scheduled tribes. These will be in addition to the usual 500 scholarships for which candidates belonging to these communities can also compete.

Bengal to probe shortcomings in higher education

The West Bengal Government will set up a high-powered committee with Dr Bhabatosh Dutta as its chairman to make a socio-economic study of the shortcomings in the field of higher education and also to suggest suitable resources for its scientific development. This was decided at a meeting of the Vice-Chancellors of five universities held at Raj Bhawan, Calcutta recently.

The meeting dwelt at length on the problems in the field of education in West Bengal. The Vice-Chancellors felt that the standard of higher education in West Bengal should improve.

The Higher Education Minister, Mr Sambhu Ghosh, said that there had been regional imbalances in the field of higher education. There was also an unplanned growth of universities and colleges in the State. These problems should be solved in the greater interest of the students.

Mr Ghosh further said that the committee, which would work on some guidelines, would also suggest suitable coruses of studies. He claimed that the Government had been able to remove irregularities from educational field during the last three years. Examinations were now being held regularly. The Government had received co-operation from the students and teachers in this respect.

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B. Ramachandra Reddy
REGISTRAR

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

Anthropology

1. Dutta, Parul Chandra. Nocte chieftainship: Its genesis, structure and function. Gauhati University.

2. Krishna Sastry, Vattipalli Narasimha Veerabhadra. Culture contact: A case study of the social dynamics of population influx into tribal areas of Utnoor Taluk of Adilabad District. Andhra University.

Psychology

1. Bezbaruha, Dipaly. Nature and form of consciousness in Yoga and modern psycho-analytical schools. Gauhati University.

2. Dutta, Tapati. Effects of malnourishment on self concept, personal-social adjustment and cognitive competence among low income group school children. Utkal University.

3. Purankar, Diwakar Yadeorao, A social-psychological study of adolescent hippie element. Nagpur University.

Sociology

1. Lalitha Devi, U. Changing status of employed women in Kerala. University of Kerala.

2. Ramaswamy, Uma. A sociological study of industrial workers in South India. University of Delhi.

3. Venugopal, C.N. G.S. Ghurye and Radhakamal Mukerjee: A comparative sociological appraisal of their selected contributions. Jawaharlal Nehru University.

Political Science

1. Dalal, Pranab Kumar. The Communist opposition in the first and second Indian Parliaments. University of Burdwan.

2. Kargeti, M.M. Bharatiya swatantarta andolan mein Kumaun ka yogdan. Kumaun University.

3. Sushil Kumar. Role of the Governor in Uttar Pradesh during 1952-71. Kanpur University.

4. Tewatia, Tek Chand. Economic independence and international law: Soviet perspective. Jawaharlal Nehru University.

Economics

1. Roy, Prannoy Lal. Relation between farm size and productivity in the context of alternative modes of production in Indian agriculture. University of Delhi.

2. Saxena, Peeyush Kumar. Cost benefit analysis of rural electrification in Kanpur District. Kanpur University.

3. Shah, N.K. Growth of saving in India since 1951. Kumaun University.

4. Sharma, Awadh Bihari. Farm management in Sagar Division of Madhya Pradesh: An economic study of private and government farms. University of Saugar.

5. Srivastava, Ram Shanker. Economics of agricultural income taxation in Uttar Pradesh with special reference to Eastern U.P. Kanpur University.

6. Tej Bahadur. A study of regional economic disparities in U.P. Kanpur University.

Law

1. Maithili Sharan, Directive Principles and changing legal concepts in India. Jiwaji University.

Education

1. Nath, Banamali. University examination: An analytical study of the conduct of P .U., degree and master degree examination of Gauhati University. Gauhati University.

2. Soundararaj, Stella. Development of curriculum on population education for collegiate students. M.S. University of Baroda.

3. Trivedi, Indravadan Umiyashanker. Use of branching variety of programmed learning materials in mathematics as diagnostic and remedial tools. M.S. University of Baroda.

Home Science

1. Bharathi, V.V. Anxiety in elementary school children: A study of some selected antecedent and consequent behavioural correlates. Sri Venkateswara University.

Commerce

1. Dikshit, Avadh Behari. Role of jute production in economic development of Lakhimpur District. Kanpur University.

2. Ghosh, Asim Kumar. Management development: A case study of the railway system of Durgapur Steel Plant. University of Burdwan.

3. Gupta, Mahesh Prasad. Uttar Pradesh upbhogta sahkari andolan: EK adhyayan. Kanpur University.

4. Mantri, V.S. Operational efficiency of banking institutions with special reference to Jaipur District. University of Rajasthan.

5. Porwal, Lalit Mohan, Management of public sector banks in India. Kanpur University.

6. Rama Muni Reddy, C. Financing agriculture by District Cooperative Central Banks. Sri Venkateswara University.

7. Subrahmanyam, M.S.V. Tax incidence and investment behaviour of multinational corporations operating in India. University of Delhi.

Management

1. Namboodiripad, P.V.S. Investment analysis of chemical projects and development of standardised mathematical correlation for cost estimation of pressure vessels in chemical industry. University of Cochin.

HUMANITIES

Philosophy

1. Bhattacharyya, Manjusri. Problem of causality in Nyaya and Samkhya Philosophy. University of Burdwan.

2. Mukhopadhyay, Srila. Problems of mind-body relation. University of Burdwan.

3. Omana, S. The philosophy of Sree Narayana Guru. University of Kerala.

4. Panigrahi, Nirmalkumar. Advaitavedanta pratikarmavyavastha *D. Litt.* University of Calcutta.

5. Roy, Manashi. An analysis of truth-relation. Nagpur University.

6. Satyanarayana, Suryadevara. Philosophical foundations of radical humanism: A study in M.N. Roy. Andhra University.

7. Srinivasa Rao, Duvvuri. A study of Anatmavada in Abhidhamma literature. Andhra University.

Religion

1. Varughese, C.J. Role of the Orthodox Syrian Christian Mission in Kerala. Gauhati University.

Linguistics

1. Sarma, Bani Kanta. Contribution of Christian Missionaries to the growth and development of Assamese language and literature during the nineteenth century. Gauhati University.

2. Sharma, Jagat Pal. Mandiyali ka bhasha shastriya adhyayan. Himachal Pradesh University.

3. Thampuran, Rama Varma Kochappan. Ezhava dialect of Travancore. University of Kerala.

Literature

English

1. Biswas, Anindya Kumar. Sensory art of John Keats: The role of the auditory in sensation clusters. Himachal Pradesh University.

2. Dhawan, S.K. Mysticism in the poetry of Robert Frost. Himachal Pradesh University.

3. Mehta, J.P. A thematic study of the novels of Bhabani Bhattacharya. Saurashtra University.

Sanskrit

1. Dutta, Pranab Kumar. A study on Sanskrit inscriptions from literary stand point upto 1000 A.D. University of Burdwan.

2. Joshi, N.D. Swatantra Bharatam: Ek samikshatmak adhyayan. Kumaun University.

3. Kesava Sarma, K.V. Treatment of primary suffixes in Bhoja's Sarasvati Kanthabharana. University of Kerala.

4. Mahatma, Vimla. Balmiki Ramayan ke pramukh patron ka manovaigyanik adhyayan. University of Rajasthan.

5. Mukhopadhyaya, Kashinath. Bhatti-o-Tanhar kavya. University of Burdwan.

6. Pathak, Suresh Chander. Raghav Naishdhiyam ka alochanatmak adhyayan. Kanpur University.

7. Ram Singh. Mahabharat mein Vedanta ka anusheelan. Kanpur University.

8. Tripathi, D.R. Sanskrit kavyashastra mein tatparya evam vyanjana shaktiyon ka tulnatmak mulyankan. Kumaun University.

Hindi

1. Asamwar, Dadarao Nanaji. Hindi aur Marathi ke madhyayugeen Ram kavya ka tulnatmak adhyayan, san 1500 se 1800 isvi tak. Nagpur University.

2. Ashok Kumar. Hindi ke ritikaleen pramukh kaviyon kee aprastut yojana. Rohilkhand University.

3. Dhaundiyal, Savita. Samkaleen kahani (1966-1975) ka samikshatmak adhyayan. Kumaun University.

4. Diwakar, Mahesh Chandra. Hindi kee nai kahaniyon ka samajshastriya adhyayan. Rohilkhand University.

5. Dwivedi, Vishnu Dutt. Hindi gitikavya: Ek sahityik vivechan. University of Bundelkhand.

6. Gupta, B.M. Ritikal ke acharya kavi Pratap Sahi: Vyaktitv evam krititv. Kumaun University.

7. Gupta Manju Lata. Sur kavya mein auchitya vidhan. University of Delhi.

8. Krishna Kaur. Hindi upanyas kee nai prevrittiyon ka vikas, 1950-1975 tak. University of Indore.

9. Lohani, B.B. Goswami Tulsidas ke sahitya ka bhogolik adhyayan. Kumaun University.

10. Minj, Usha Rani, Chhatisgarhi evam uranv boli ke lok sahitya ka tulnatmak adhyayan. Ravishankar University.

11. Mishra, Santosh Kumar. Avadhi kee lok natya parampara. Kanpur University.

12. Mukherji, Saran. Hindi mein sankarta nirman prakriya evam utpadakta. Kanpur University.

13. Prem Lata. Vrindavanlal Verma ke upanyason mein anchalikta. University of Bundelkhand.

14. Satpute, Vasant Purushottam. Hindi aur Marathi ke nibandhon ka tulnatmak adhyayan san 1873 isvi se 1920 isvi tak. Nagpur University.

15. Sharma, Kiranbala. Sursagar mein prem manovaigyan. University of Indore.

16. Shrivastava, Kanti Devi. Adhunik Hindi prabandh kavyon mein vyakti aur samaj, 1947 se 1967 tak. Kanpur University.

17. Singh, Brinda. Hindi kee nirgun evam sagun bhakti sadhana mein saman tatwa. University of Gorakhpur.

18. Tewari, Parshuram. Rashtrkavi Pt. Madhav Shukla: Vyaktitv evam krititv. Kanpur University.

19. Tewari, Shiv Swarup. Unnav janpad ka sahitya yogdan. Kanpur University.

20. Vora, Sarojben Kailashchandra. Adhunik Hindi Jain sahitya, 1850 AD to 1970 AD. M.S. University of Baroda.

Bengali

1. Chakrabarti, Jagannath. Meghnadbadh kabye chitrakalpa. *D. Litt.* University of Calcutta.

2. Roy, Sunit Kumar. Krishnamangal-kavyadharay Ramprasad Rayer Krishnalilamrita Sindhu: Punthi abalambane alochana. University of Burdwan.

3. Sinha, Asit, Bangla upanyase samaj chintar bibartan, 1900-1950. University of Calcutta.

Marathi

1. Gade, Vijaya Ramesh. Acharya Atre yanchya sahityateel vinodache samikshan. University of Indore.

Malayalam

1. Malathi Devi, P. A comparative study of the mystical elements in Hindi and Malayalam poetry. University of Kerala.

2. Vijayakrishnan, N. Descriptive grammar of the Thullal Pattus by Kunchan Nambiar. University of Kerala.

Telugu

1. Bhoomaiha, A. Nayani Subba Rao and his works. Kakatiya University.

2. Seshagiri Rao, Pochiraju, Veturivari saraswata varivasya. Andhra University.

History

1. Acharyya, Srikumar. Education in Bengal, 1813-1859: A historical study and analysis. University of Burdwan.

2. Basu, Mrinal Kumar. Indian National Congress with special reference to the moderates and extremists, 1910-1920. University of Calcutta.

3. Bhattacharyya, Amita. History of Bengal from C.550 to C. 750 A.D. University of Burdwan.

4. Chattopadhyay, Kanailal. Some social and economic aspects of Brahmo reform movement, 1858-1883. Rabindra Bharati University.

5. Dharampal. British colonial policy of indirect rule in Africa: A case study of Northern Rhodesia. Jawaharlal Nehru University.

6. Gill, Rupinder Kaur. Bhagat Singh and Indian revolutionary movement. Ravishankar University.

7. Jai Gopal. Social change in the Punjab during the second half of the nineteenth century: A study of Jullundur District. University of Delhi.

8. Jani, S.V. A history of the Arzi Hakoomat of Junagadh. Saurashtra University.

9. Kapur, K.D. Indo-Pak conflict and Soviet policy: Tashkent to Bangladesh, 1966-1971. Jawaharlal Nehru University.

10. Mishra, Sachchidanand. Some aspects of village and village life in Ancient India. University of Gorakhpur.

11. Peacock, Olive. Minorities and national integration in India: A case study of the Anglo-Indian community in Rajasthan. University of Rajasthan.

12. Puranam, Radha Krishna Prasad. Cultural content of the Sunga-Satavahana art. Nagpur University.

13. Trivedi Subodhani. Kanpur ka audyogik evam shahari vikas. Kanpur University.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from Periodicals received in AIU Library during October, 1980

EDUCATIONAL PHILOSOPHY

Bonham George W. "*Education and the world view*" Change 12(4); May-June 80: 2-7.

Hudson Liam "The octopus, the telephone exchange, and the ivory tower". *Times Higher Education Supplement* (412); 26 Sept 80: 11-12.

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CLASSIFIED ADVERTISEMENTS

INDIAN INSTITUTE OF TECHNOLOGY
KHARAGPUR
Advertisement No. R/5/80

Applications are invited for the undermentioned posts at Indian Institute of Technology, Kharagpur (West Bengal).

I. **Senior Technical Assistant—Civil Engineering Department—One post—Reserved for Scheduled Caste**

Scale of Pay : Rs. 550-25 750-EB-30-900/- Plus D A. as admissible

Age : Between 25 and 35 years

Qualifications & Experiences

Essential

(1) Good general education preferably Intermediate Science or equivalent with Physics, Chemistry and Mathematics.

(2) Diploma in specific branch of study or equivalent.

(3) Experience of at least 5 years in specified fields in repair, design and construction of various types of equipment and accessories.

Job Requirements

(1) Preventive maintenance of all mechanical testing machines for structural testing. (2) Operation of electrical and electronic equipment. (3) Development of testing systems for desired loading and instrumentation e.g., setting up of specificas, fixing of gauges, measurements etc. (4) Maintenance of stock for equipment, accessories and machine spares.

II. (A) **Technical Assistant—Central Instruments Service Section—One post**

(B) **Technical Assistant—Computer Centre—One post**

(C) **Technical Assistant—Chemical Engineering Department—Reserved for Scheduled Tribe—One post**

Scale of Pay : Rs. 425-15-500-EB 15-560 20-700/- Plus D.A. as admissible

Age : Preferably not below 20 years.

Qualifications & Experiences

Intermediate Science or equivalent plus all round workshops and Lab. training for not less than 5 years or Bachelor's degree in Science or a Diploma in specified branch of a study plus adequate Lab. and Workshop training.

Job Requirements

(a) **for the post of T.A. (CISS)**

(1) To repair and calibrate electronic instruments and equipment used in research laboratories i.e., Oscilloscopes, Strain bridges, recorders, pH meters, ultrasonic flow detectors, frequency counters, conductivity bridges etc.

(2) Adequate knowledge of valve and transistors characteristics and of electronic circuits involving valves, transistor silicon controlled rectifiers, triacs, linear and digital integrated circuits.

(3) Ability to design and fabricate electronic circuits and testing of such systems.

(b) **for the post of T.A. (Computer Centre)**

(1) Either good knowledge of repair of Electro-mechanical and Electronic equipment.

Or

(2) Good knowledge of Computer Programming in FORTAN & COBOL language.

(3) Good knowledge of operation of Computer System

(c) **for the post of T.A. (Chemical Engg Deptt)**

(1) Must have experience in precision turning of nozzle, ejectors, bubble caps, heat exchanger heads.

(2) Must have experience of erection, fitting, testing and operation of Chemical Engineering equipments, pumps and compressors and ore dressing equipments.

III. (A) **Mechanic Grade 'A'—Central Instruments Service Section—One post—Reserved for Scheduled Tribe**

(B) **Mechanic Grade 'A'—Computer Centre—Two posts**

(C) **Mechanic Grade 'A' (Automobile)—Estate (E&M) Unit—One post**

Scale of Pay : Rs. 380-12-500-EB-15-560/- Plus D.A. as admissible

Age : Ordinarily not more than 35 years

Qualifications & Experiences :

Essential

(1) Good general education preferably Matriculate or equivalent.

(2) 15 year's experience including apprenticeship in a recognised workshop relaxable in case of higher technical proficiency. (3) Ability to manufacture, construct and erect from working drawings and ability to make simple dimensioned sketches. (4) Ability to work within prescribed tolerances. (5) Knowledge of Hindi and Blue Printing reading. (6) Ability to impart instructions (Desirable).

Job Requirements

(a) **for the post of Mech. Gr. 'A' (C SS)**

(1) High proficiency in operating lathes, Milling machines, Cylindrical grinding, Jig boring machine and knowledge in silver brazing and soft soldering work.

Should be able to fabricate precision equipments like Microwave components, Research equipments etc. and be fully conversant with various types of measuring instruments used in the shop floor.

Or

(2) Proficiency in repairing mechanical instruments including fabrication of special parts thereof in watch makers precision lathe, Grinding and Optical Jig boring machine.

(b) **for the post of Mech. Gr. 'A' (Computer Centre)**

Ability to give 14,000 key depression (both Alpha/Numeric) per hour by IBM 029/026 Punching Machine. Should have programming knowledge of Unit Record Machines like IBM 407/402 etc.

Or,

Ability to understand defect in Unit Record Machines like 029/026, 077, 407/402 etc. with

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THE UNIVERSITY OF KASHMIR
SRINAGAR
Advertisement Notice

Applications on the prescribed application form to reach the undersinged by **13th November, 1980** are invited for the following posts carrying the pay-scales indicated against them :

1. Professor in Commerce, Economics, English, Mathematics (temporary) and History.	Rs. 1500-2500.
2. Reader in Law and Persian	Rs. 1200-1900.
3. Lecturer in Commerce, English, French, Hindi (temporary) Mathematics (temporary), Physics, Zoology and Scientific Officer in Physics	Rs. 700-1600.

The prescribed application forms can be had from the University Office on cash payment of Rs. 6/- or by sending a crossed Postal Order drawn in favour of the Registrar of this University cashable at Srinagar Post Office along with a self addressed envelope (5" x 11") with the necessary postage.

Candidates are advised in their own interest to send their detailed curriculum vitae in advance.

Details in respect of the qualifications prescribed for the posts can be obtained from this office.

Peerzada Ghulam Hassan
DEPUTY REGISTRAR (Admn.)

sound knowledge in repair of Electronics/Electromechanical equipments.

Desirable : Knowledge in repairing work of Transformer, Relay Motor, Airconditioner etc. Ready to accept shift duty.

(c) **for the post of Mech. Gr. 'A' (Automobile)/Estate (E&M)**

(1) Knowledge of repairing of the Diesel and Petrol driven vehicle. (2) Knowledge of schedule maintenance of the vehicle. (3) Knowledge of diagonising the fault and able to repair independently.

IV. **Mechanic Grade 'B'—Metallurgical Engineering Department—One post—Reserved for Scheduled Caste**

Scale of Pay : Rs. 330-8 370-10-400-EB-10-480/- Plus D.A. as admissible

Age : Not less than 25 years.

Qualifications & Experiences

Same as for Mech. Gr. 'A' except that the length of experience should not be less than 8 years.

Job Requirements

(1) Knowledge of electrical installation. (2) Ability to detect and repair faults/defects in electrical lines. (3) Knowledge and experience in the circuits of electric furnaces and induction furnaces. (4) Workman's permit in part II(b) O.V.

Desirable : Knowledge of welding and motor winding and repair of starters.

V. **Mechanic Grade 'C' (Diesel Mechanic)—Estate (E&M) Unit—One post**

Scale of Pay : Rs. 260-6-326-EB-8-350/- Plus D.A. as admissible

Age : Not less than 21 years

Qualifications & Experiences

Same as that for Mech. Gr. 'A' except that the length of experience need not be more than 5 years and that he shall not be expected to have high degree of skill in handling more than one machine of his trade.

Job Requirements

(1) Knowledge of operation and maintenance of diesel generating set. (2) Knowledge of minor repair of the diesel set. (3) Knowledge of electrical handling equipments. (4) To attend round the clock duty and shift duty at odd hours.

Applications on plain paper, stating Name, Father's Name, Present Address, Permanent Address, Qualifications & Experiences in detail, Date of Birth, Nationality etc. in English accompanied with an application fee (non-refundable) of Rs. 3.00 (Re. 0.75 for SC/ST) for Category No. I and II and of Re. 1.00 (Re. 0.25 for SC/ST) for other categories payable by means of crossed Indian Postal Order to the Indian Institute of Technology, Kharagpur at Kharagpur—2 Post Office should reach the Registrar, I.I.T., Kharagpur (West Bengal) by the **15th November, 1980**.

Candidates belonging to Scheduled Caste/Scheduled Tribe community must enclose attested copies of caste certificates from the competent authority.

Applicants who are in the employment of Government/Semi-Government organisations or of any Government undertaking must send their applications through proper channel.

A.K. Sur
REGISTRAR

INDIRA KALA SANGIT VISHWAVIDYALAYA

KHAIRAGARH (MP)

Applications are invited for various posts in the University Teaching Departments as detailed below :

	Post		Scales of Pay	Approximate Total emoluments at the minimum of the scale
				Rs.
(1)	Professor (One)	Vocal or Instrumental Music.	Rs. 1000-50-1500/- (UGC scales likely)	1,680.00
(2)	Reader (Three)	— One each in— (1) Kathak Dance, (2) Painting, (3) Folk Music & Art.	Rs. 700-40-1100/- (UGC scales likely)	1,376.60
(3)	Lecturer (Six)	— One each in— (1) Vocal Music, (2) Instrumental Music (Violin), (3) Kathak Dance, (4) Hindi, (5) Orchestration & Group Singing & (6) Sitar.	Rs. 400-30-640-EB-40-800/- (UGC scales likely)	960.70
(4)	Sanskrit Pandit (One)	— Research Department.	Rs. 400-30-640-EB-40-800/- (UGC scales likely)	960.70
(5)	Assistant Lecturer (One)	— Kathak Dance	Rs. 260-10-360-EB-400-10-500/- (Likely to be revised)	735.00
(6)	Research Assistant (One)	— Department of Folk Music/Art	Rs. 350-12½-400-20-500-EB-25-600/- (*Revised*)	705.60
(7)	Technician (Audio-Visual) (One)	— Folk Music & Art Department	Rs. 246-6-270-10-350-12½-400 20-460/- (*Revised*).	564.40
(8)	Technician (One)	— Tapes & Tape Recorders		
(9)	Tabla Accompanist (One)	— Kathak Dance Department	Rs. 280-10-350-12½-400-EB-20-480/- (*Revised*).	505.20

Posts are permanent and carry CPF benefits and DA/ADA at University rates. Appointments will be on probation according to University Rules.

Application Fees payable by I.P.O. are : Professor-Rs. 10/-, Readers—Rs. 7/-, Lecturer and Sanskrit Pandit—Rs. 5/- and Rs. 3/- for other posts.

Application Forms and Details of Qualifications etc. obtainable from the Registrar by sending self addressed Rs. 1.25 stamped envelope of 25x12 cms. Those who have applied for any of the above posts in response to the earlier advertisements need not apply again. Scheduled Castes and Scheduled Tribes candidates will be given preference according to rules.

Last date for receipt of duly completed applications is **20th November, 1980**.

D.K. Ghosh
REGISTRAR

THE UNIVERSITY OF BURDWAN
RAJBATI : BURDWAN WEST BENGAL

Advertisement No. 3/80-81
Dated, November 14,1980.

Applications in the prescribed form are invited for the following posts in the approved scale of pay of Rs 700-40-1100-50-1600 with allowances and other benefits according to University Rules.

A. **Department of Law**: Lecturer—Two posts.

B. **Department of Sanskrit**: Lecturer—One post.

MINIMUM QUALIFICATIONS

(a) A doctor's degree or published research work of an equally high standard, and

(b) Consistently good academic record with first or high second class (B in the seven point scale) Master's Degree in the relevant subjects or an equivalent degree of a foreign University.

DESIRABLE QUALIFICATIONS SPECIALISATION OR PROFICIENCY

For A: i) First post with specialisation in Labour Laws ii) Second post with specialisation in Property & Land Laws

For B: **Essential**

Capability of teaching Epigraphy and Grammar. At least five years' teaching experience in Honours classes.

The University Council may on recommendations of the appropriate Selection Committee, waive any of the requirements in view of the candidates specialised knowledge in the subject. The choice of the Committee may not necessarily be confined to those who apply formally.

For application form and other information apply to the Registrar with a self-addressed stamped (0.50p.) envelope (9"x4").

Last date for submission of application with requisite fee of Rs 5/- is **November 25, 1980**

A.K. Chaudhuri
REGISTRAR

SOUTH GUJARAT UNIVERSITY

University Campus, Udhna-Magdalla
Road, Post Box No. 49,
Surat-395007

Applications are invited in the prescribed form (in eight copies) for the following teaching posts in the Post-Graduate Departments of the University.

Sr. No., Name of the Department and the Number of Posts

1. LINGUISTICS

One Reader

(i) Sound training and research of merit in Modern Theories of Grammar & Philosophy of Language with some experience of field studies;

(ii) Good command over Gujarati and Marathi.

2. ECONOMICS

One Reader (Economics)

In addition to having specialisation in Econometrics, the candidate must have teaching and research experience in Regional Economics and Economic Development and Planning.

3. CHEMISTRY

One Professor

Qualified in Physical/ Organic/Inorganic Chemistry with deep research interest in Dye stuff Chemistry and Chemistry of Drugs.

4. MATHEMATICS/STATISTICS

One Lecturer in Mathematics
One Lecturer in Statistics

5. SOCIOLOGY

One Lecturer

Preferably specialization in Industrial Sociology/Political Sociology.

6. BIO-SCIENCES

One Reader

Specialization in Animal Science (Zoology) preferably with research experience in fisheries, Aquatic Biology, Radiation Biology.

Pay Scale are as under:

(1) Professor: Rs 1500-60-1800-100 2000-125/2-2500
(2) Reader : Rs 1200-50-1300-60-1600 Assessment 60-1900
(3) Lecturer : Rs 700-40-1100-50-1300- Assessment 50-1600.

In addition to pay the teachers of the University Departments are entitled to draw dearness allowaace, House Rent Allowance and other benefits like Contributory Provident Fund and Gratuity as admissible under rules from time to time.

Information about the qualifications and application form prescribed for each post can be had from the undersigned on payment of Rs 7/- in cash or by postal order alongwith self addressed envelope of 22cmx13cm size duly stamped with Rs 2/-.

The last date for receipt of the application will be **10-11-1980**.

G.A. Desai
REGISTRAR

Indian school of Mines

DHANBAD-826 004

NO: 218051/BME

Dated: 29.9.1980

Notification

Qualifying examination (BME) for award of First Class Manager's Certificate of Competency (Coal and Metal) will be conducted on the following dates according to the syllabus prescribed by the Board of Mining examination under Mines Act.

IA	Methods of working (Coal)	27.11.80	8.00 a.m.
IIA	Methods of working (Metal)	27.11.80	1.30 p.m.
IB	Mine Management, Legislation and General Safety (Coal)	28.11.80	8.00 a.m.
IIB	Mine Management, Legislation and General Safety (Metal)	28.11.80	1.30 p.m.

2. Only those who graduated in **B Tech. (Mining Engg)** this year (1980) from the Indian School of Mines or those who have cleared at least one paper in the BME qualifying examination conducted by the School within the past three years, are eligible to take the above examination.

3. Candidates willing to appear in the said examination are required to submit their application forms along with examination fee of Rs. 100/- (in form of either cash, or Bank Draft) on or before **November 10, 1980.**

4. Viva-Voce of the examination will be conducted at a later date for those candidates only who qualify in the relevant theory paper. Information in respect of this shall be sent to the concerned candidates at the appropriate time.

5. A Gas-testing examination will also be conducted for these candidates on November 24 and 25, 1980, in the Deptt of Min Engg. of this school. Candidates may apply for this examination separately in the prescribed proforma, along with a fee of Rs. 5/- (in form of either cash or Bank Draft) on or before **November 10, 1980**.

6. Prescribed blank application forms and a copy of the syllabus for these examinations can be obtained from the Registrar, Indian School of Mines, Dhanbad-826004, by sending a self-addressed stamped envelope of size 23 cm x 10 cm.

REGISTRAR

UNIVERSITY NEWS, NOVEMBER 1, 1980. **Regd. No. R.N. 7180/62 Postal Regd. No. D(C)-534**

AGRA UNIVERSITY

Senate House
Agra

WANTED one Professor and one Reader each in Mathematics, Physics, Chemistry and Zoology for M. Phil. programme. Posts permanent. Grade Rs 1500-50-1800-100-2000-125/2-2500 for Professor and Rs 1200-50-1300-60 1900 for Reader.

QUALIFICATIONS

PROFESSOR **Either**

eminent scholarship with published work of high quality and active engagement in research and ten years experience of teaching or research and experience of guiding research at doctorate level;

or

outstanding scholarship with established reputation for significant contribution to knowledge.

READER:

(a) Good academic record with a doctorate degree or equivalent published work, and active engagement in research or innovation in teaching methods or production of teaching materials; and

(b) Five years experience of teaching or research including at least three years as Lecturer or in an equivalent position:

Provided that the requirement contained in clause (b) may be relaxed in the case of a candidate who, in the opinion of the Selection Committee, has outstanding research work to his credit.

Applications must reach the undersigned latest by **Nov 30, 1980** on the prescribed form obtainable from Assistant Registrar (Publications) Agra University, Agra on payment of Rs 5/-, either in cash at the University counter or through crossed bank draft payable to the Finance Officer, Agra University, Agra.

S.B.B.B. Singh
REGISTRAR

MANIPUR UNIVERSITY

Imphal : Canchipur
Advertisement No. 2/80
Dated : 14-10-80

Applications are invited for the posts of (1) Registrar, (2) Co-Ordinator (Academic Affairs) & Controller of Examinations and (3) Officer on Special Duty (Examinations), for the Manipur University. **Scale of Pay** : For post No. (1) Rs. 1500-60-1800-100-000/- p.m.; for post No. (2) Rs. 1500-60-1800-100-2000 p.m. and for post No. (3) Rs. 1200-60-1500-EB-60-1800/- p.m. **Qualifications and Experience** : For post No. (1), (i) First or high second class Master's Degree or equivalent qualifications; (ii) Considerable experience in a responsible position in a University or in an institution of higher education or in a similar organisation; (iii) Ability to take organisational charge of meetings and administrative affairs of the University; (iv) Preferably below 55 years of age; For Post No. (2), (i) First or high second class Master's Degree or equivalent qualifications; (ii) Considerable experience in academic administration in a responsible position in a University or in an institution of higher learning with particular reference to ; (a) Formulation and implementation of development schemes/programmes; (b) Up-keep and maintenance of students' academic performance records preferably through modern Management Techniques; (c) Students' Affairs in general, like assisting and coordinating in admissions, institution and award of scholarship / fellowships, academic matters pertaining to recognised/ maintained institutions, academic linkages/collaborative programmes; (iii) Ability to take organisational charge of meetings and academic affairs in the University; (iv) Adequate experience in semester system, letter grading and continuous evaluation techniques; or Experience of conducting University examinations and other allied work at the executive level for atleast 10 years; (v) Should have a record justifying entrusting of confidential work; For post No. (3), (i) At least a second class post-graduate degree; (ii) Atleast five years' experience of conducting University examinations and other allied work at the executive level or atleast five years administrative experience in a position involving supervision, control and planning; (iii) Should have a record justifying entrusting of confidential work; (iv) Experience of University administration and familiarity with the working of University Bodies and Institutions is desirable.

It will be open to the University to consider names of suitable candidates who may not have applied. A higher starting pay may be granted to a highly qualified candidate. Both ways second class rail fare by the shortest route will be paid to the candidates invited for interview from out-station. Applications, on plain papers and in duplicate, giving full particulars of the date of birth, educational qualifications, professional experience, emoluments drawn, etc., together with attested copies of testimonials should reach the Officer on Special Duty, Manipur University, Canchipur, Imphal-795003 latest by **25th Nov., 1980**.

GUJARAT AGRICULTURAL UNIVERSITY
SARDAR KRISHINAGAR

Advt. No. 5/80.

Applications are invited in the prescribed forms for the following posts in the Gujarat Agricultural University.

Sr. No.	Name of the post and pay scale	Discipline
1.	Professor/Programme Executive/ Research Scientist. Rs. 1500-60-1800-100-2000-125/2-2500.	Plant Breeding/Botany/Cytogenetics Agril, Chemistry and Soil Science, Agril. Economics, Plant Pathology, Agril. Extension, Veterinary Medicine.
2.	Associate Professor/Associate Research Scientist, Rs. 1200-50-1300-60-1600-Assessment-60-1900.	Plant Breeding/Agril. Botany/ Cytogenetics/Plant Physiology/Agril. Chemistry and Soil Science/Entomology, Horticulture, Plant Pathology, Nematology, Plant Protection, Agril. Economics, Agril. Engineering, Agronomy/Crop Production, Statistics, Agril. Extension, Dairy Engineering, Dairy Chemistry, Microbiology Bio Chemistry, Vety. Surgery, Nutrition, Animal Genetics, Breeding, Animal, Science, Clinic, Bacteriology.

Application forms and other details regarding qualifications and experience can be had from the Registrar, Gujarat Agricultural University, Sardar Krishinagar. 385506. Dantiwada, Dist. Banaskantha on cash payment of Rs. 2/- or by sending crossed Indian Postal order of equal amount issued in favour of Chief Accounts Officer, Gujarat Agricultural University, Sardar Krishinagar alongwith the self addressed envelope (23 cm x 11 cm) affixed with 50 paise postage stamps. **The minimum qualification for all the posts is Ph. D. except Agricultural Engineering post.**

The candidates already in the service of this University may apply through their respective officers on plain paper with six copies of Biodata. **All candidates called for interview will have to attend the same at their own cost.**

Last date for receiving the application forms complete in all respects is **29.11.80.**

Printed & Published by ANJNI KUMAR, on behalf of the Association of Indian Universities
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University News

FORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH NOVEMBER 15, 1980

2 DEC 1980

Sir Seewoosagur Ramgoolam, Prime Minister of Mauritius, receiving an Honorary Membership of the Association of Surgeons of India from Dr. R. K. Gandhi, President of the Association, in New Delhi.

—Courtesy : *The Statesman*

ION OF INDIAN UNIVERSITIES PUBLICATION

TECHNICAL TEACHERS' TRAINING INSTITUTE
(SOUTHERN REGION) ADYAR] MADRAS-600020

Advt. No. 4/80

APPLICATIONS are invited in the prescribed form for the following posts:

Posts & Scales of Pay	Qualifications	Experience
1. TRAINING AND PLACEMENT OFFICER (1 No.) Rs. 1500-60-1800 **Age** 35 to 48 years	First Class Bachelor's Degree in an Engineering discipline	Minimum of 7 to 10 years of distinguished experience in teaching/training/research in an institution of University standard at post-graduate level or in a teachers' training institute; *or* 15 years of professional experience in a polytechnic or Engineering College out of which at least 6 years must have been at the level of a Principal or Head of Department in a polytechnic or other equivalent cadres.
2. ASSISTANT PROFESSOR OF EDUCATIONAL COMMUNICATION (1 No.) Rs. 1200-50-1300-60-1900 **Age** 30 to 45 years	First Class Master's degree/ Ph.D. in English	Minimum of 5 years experience in teaching/research in an institution of University standard or in a teachers' training institute *or* 10 years teaching experience in a polytechnic or Engineering College out of which at least 3 years should have been at the level of Lecturer in a polytechnic or other equivalent cadres.
3. ASSISTANT PROFESSOR OF SCIENCE (1 No.) Rs. 1200-50-1300-60-1900 **Age** 30 to 45 years	First Class Masters degree/ Ph.D. in Science	-do-
4. PRODUCTION EXECUTIVE (1 No.) Rs. 1100-50-1600 **Age** 30 to 45 years	Degree in Engg. with a Diploma or a Cert., in Media Production or Master's Degree in Science/ Arts with Dip/Cert. in Media Production or Master's degree in Science/ Arts with B.Ed./B.T. having specialisation in Media Production	At least 6 years' experience in one or more of the following areas i) Television Programme production ii) Film programme production iii) Production of AV programmes for instructional purposes (e.g.) Graphics, Filmstrips, broadcasts etc.
5. LECTURER IN MECHANICAL ENGINEERING (1 No.) Rs. 700-40-1100-50-1600 **Age** 25 to 35 years	First Class Master's Degree in Mechanical Engineering	2 years teaching/industrial research experience in an institution of University standard or 3 years teaching experience in a polytechnic or Engineering College.
6. LECTURER IN ELECTRICAL ENGINEERING (1 No.) Rs. 700-40-1100-50-1600 **Age** 25 to 35 years	First Class Master's Degree in Electrical Engineering	-do-

NOTE : For all posts : Educational qualifications in lieu of longer period of experience and experience requirements in lieu of better educational qualifications are relaxable *in case candidates with the prescribed qualifications and experiences are not available.* Age is also relaxable in suitable cases.

All posts carry usual allowances as applicable at present to the employees of the Central Government. Preference will be given to SC/ST candidates if they are otherwise qualified for all the posts. Those who are already in service may also be considered on 'Foreign Service Terms'.

The Institute reserves to itself the right to alter the number of posts, to fill or not to fill any or all the above posts, and to call or not to call the candidates for interview.

Application form together with 'Instruction to candidates' and detailed qualifications, experience, job description etc. can be obtained from the Principal of the Institute on requisition with a self addressed envelope (23 x 10 cm) duly affixing postage stamps to the value of Rs. 1.20.

Applications duly completed in all respects should reach the Principal on or before **15-12-1980**.

3rd November, 1980.

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Editor : ANJNI KUMAR

Research Consultancy In Universities

V.V. Mony*

Research is one of the fundamental functions of a university and all the pure research and most of the basic research in any field is done by the universities. In developed countries universities are the vehicles for acquiring new technology or attaining new knowledge or achieving new perfections in various scientific fields. In underdeveloped countries its role is more important and this could be fulfilled effectively if there is regular traffic of information and consultations between the citadels of knowledge and the users of technology.

British universities attach great importance to the liaison between them and the industry for the promotion of research as well as the flow of funds for it. A few like Manchester and Birmingham have full fledged research consultancy service as well.

Research consultancy service of the Manchester University is an advisory service and was established to promote fuller exploitation of the technology developed inside the university. The service assists members of staff in matters concerning collaborative research with outside bodies. However it is significant that the university is careful to maintain the academic freedom of its members. Each department is free to choose and negotiate with any outside body and make its own arrangement for collaborative research. The research consultancy office of the university would be available if needed for assistance in the preparation of appropriate documents.

One function of the consultancy service is advice on patents. It offers assistance on all aspects of commercial protection in respect of innovative technology and undertakes to obtain patents and other protection. It provides full assistance in the preparation of all licence documents and arranges for the collection of royalty income too.

Research being entrusted to the university will be cost effective for the users of technology as very few users can set up detailed infrastructure facilities for inventive research within them. Fewer still could afford the specialised equipment and the necessary staff for managing it.

With constantly changing technology the demands on industries are greater for changing their technology to keep themselves neoteric. It is here the industry benefit from the work of universities who will anyway have the manpower and material strength to help them.

Many medium type industrial companies in Britain completely depend on the universities for their research and multinationals too channel a good proportion of their budget for research through universities

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**PRO, University of Kerala.*

An Experiment In Teacher Education

J.S. Rajput*

The real problem in imparting education is that of large numbers and non-availability of sufficient resources. In the present context, the significant factor which often receives scant attention is the education of the teacher himself. The lacunae and the deficiencies of the existing system of education of teachers have been pointed out by various commissions and committees. The existing system, however, still needs much change from the present static and rigid structure. It has remained so primarily because of the lack of the will to implement the suggestions in actual practice. Maybe, the lack of proper understanding of the real situations at various levels had been the root cause. The teacher education programmes have to be functional and relevant to the needs and aspirations of the pupils whom these teachers are expected to handle.

An interesting anomaly invariably exists in most of the teacher training institutions. The teacher-educator himself rarely practices the methodologies which he teaches to the pupil-teachers. Set patterns of lesson planning and techniques of teaching are usually followed during the few weeks/months when the pupil teachers are expected to do the practice teaching. Teacher-educator as well as pupil-teacher are both conscious and aware that this lesson planning will rarely ever be practised by the trainee when he himself becomes a teacher.

The Education Commission 1964-66 had made a strong plea to develop education as a separate academic discipline. Teacher training institutions, however, have been emphasising the training aspect more than the discipline aspect of education. However, it has been felt that even the training aspect needs review and has to be task-oriened. The basic idea at the first degree level training should, in any case, not be to produce educationists but skilled teachers. The task of preparing educationists and educational researchers could in general be left to universities and such colleges which could offer education as an elective at undergraduate level and a full-fledged master's degree level course, M.A. (Education).

Teaching in the present day context has become a highly specialised job. It requires a highly competent and skilled teacher to handle various aspects of classroom teaching. Basically, a teacher-educator has to develop the capability for life long learning as he has to keep abreast of growing knowledge, techniques and skills which are percolating to the school stage. This has also affected the content of knowledge and methods of how to teach. Taking some of these factors into account, the National Council of Teacher Education (NCTE) has recommended a framework for the teacher-education curriculum. The recommendations give 60 per cent weightage to the methodology and practice teaching including relevant practical part and 20 per cent for working with the community at pre-school and primary teacher training programmes. Only 20 per cent weightage is given to pedagogical theory. There is a slight difference for the higher secondary and collegiate stages where pedagogic theory receives 30 per cent weightage while content-cum-methodology and practice teaching including relevant practical work receives 50 per cent weightage.

The recommendations have been studied in great detail by various agencies associated with the teacher education programmes and steps have been taken at various levels for introduction of new structure of teacher training programmes.

Madhya Pradesh effort in this direction takes into the account major recommendations made by the National Council of Teacher Education. The new teacher training programme of extended duration aims at providing learning experiences using a variety of new techniques—tutorial, team teaching, etc. It envisages sincere implementation of the tutorial system. The teachers of the practising schools, after due orientation, will work with the college supervisors and method masters. The programme has an inbuilt component of internship in teaching on the line of internship for medical students. This would enlarge the scope of experiences and enhance the competence of the teachers. This would be an useful effort in on-the-job learning in realistic situation.

The internship consists of three parts: pre-internship when he learns the basic ingredients of expectations for him, in phase I of three months duration he gains insight in term planning, unit planning and will handle classes. Adequate opportunity would be provided to the teacher trainee for developing teaching skills through demonstration and practice. In the final phase of four months duration he has to take at least four periods per day, prepare his plans, records, aids and attend the training college on week-ends to seek guidance and report the progress. Here is an opportunity for the student teacher to secure spontaneous feedback out of various realistic working situations in the schools. The association of the practicising schools and the training colleges will help evolve a pattern of internship on the basis of internship for medical students in some respects.

For each school subject, a special paper on content-cum-methodology is included in the new B.Ed. programme. On the pattern of Regional Colleges of Education, an integrated approach to content and methods has been adopted. In the very beginning of the course, the student teacher would be introduced to current innovations and projects of the State education department. This will help him become a participant in the entire new strategy for educational development. Provision exists for several special papers pertaining to areas of current relevance, viz. non-formal education, population

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**Principal, Regional College of Education, Bhopal.*

Financial Management of Agricultural Universities In India

C.B. Padmanabhan*

Agricultural Universities in India have been set up in response to the recommendations of the Indian Education Commission and that have been functioning for the purpose of increasing agricultural production by means of research extension and agricultural education. They have to carry out research and make available the findings to the farmers and enable them to raise agricultural production by adopting new methods of cultivation. Increased agricultural production is also a means to the end of raising rural prosperity and ultimately the standard of living of the farmers of India.

In this process the 21 Agricultural Universities in India are consuming a large volume of resources. The budget of some of the agricultural universities is about Rs. 10 crores a year. It, therefore, becomes necessary to ensure that the available resources are effectively used and the objectives for which the agricultural universities have been set up are adequately fulfilled. A major requirement for this purpose is to adopt a managerial approach to financial administration in the universities and the first step in this process is to have continuous planning. Every university is no doubt preparing five year plans but it is done as part of the Five Year Plan of India and in response to the requirement of Indian Council of Agricultural Research or the State Government. This five year planning, however, is not adequate. The planning process will have to be a continuous one with long term horizon and the objectives will have to be laid down taking into account the changing requirements of agricultural development within the counntry as a whole and in each region or the state where the agricultural university is located. There should be broad goals and they have to be translated into specific objectives which should be aimed at for achievement in given periods of time. Within the framework of such a planning process at each stage the following elements in financial management have to be taken note of. At the pre-planning stage there should be (i) **Adequate Financial Analysis**. This consists in analysing the funds received from the State Governments, Indian Council of Agricultural Research as well as funds received for ad-hoc research purposes. In addition it also has to take into account the income received from fees from students as well as the yield that has been obtained from the agricultural land in the form of increased agricultural production, sale proceeds of the seeds, etc. The trends in the income obtained from each of these source will have to be analysed and corrective steps will have to be taken in time, for example, if the yield from the land cultivated by an agricultural university is going down especially when compared with yield from other land in the state as well as in other agricultural universities, steps will have to be taken to improve the situation. Similarly, the trends in the fees collected from students will have to be analysed with a view to find out whether the fees adequately cover the cost of giving the education to the students. If it does not, there is a need for raising the level of fees and if that is not feasible other ways of obtaining income from the community in the form of consultation fees etc. will have to be thought of. In this way adequate financial analysis will have to be done in order to know the trends. (ii) **Compilation of Cost Data**.. There should be an annual collection, compilation and analysis of the cost of various items which are used by the agricultural universities for their operations. Such collection and analysis of cost data will be helpful for the purpose of knowing how the cost per unit of operations in a certain university has been changing over a period of time and how it compares with the cost of similar operations in other agricultural universities or other farms. (iii) **Costing of the Project**. After these things are done at the pre-planning stage, the planning stage, follows. At the Planning stage every project or scheme undertaken or the target aimed at either in turning out the number of agricultural graduates or research schemes undertaken or whatever, they should be costed by using the cost figures which have been already arrived at at the pre-planning stage. Cost control is an important requirement in financial management and for this purpose there has to be as acurate costing of the projects and schemes as possible. (iv) **Budgeting**. Budgeting is an important activity. In budgeting, the administration and faculties will have to work very closely and continuously. At present there is some kind of participation in budgeting by all parties concerned in the sense that the faculty supplies the information about the resources required for various activities to the office of the Controller who has to consolidate and prepare the annual budget. But this kind of participation in the process of budgeting for a university is not sufficient. It has to be fully participatory and all sections of the university like the faculty, those incharge of the colleges, those incharge of the agricultural research stations as well as extension people and, if possible, selected members of the farming community will have to come together atleast once in a while before budgeting is prepared. This is because budgeting does not involve only the preparation of the amount of money required for carrying on the activities in one year but it is something more than that.

In fact budgeting has three-fold dimensions which are : control, management and planning and each one of them is important,

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By and large at present the control aspect i.e. to ensure that money budgeted for is spent only for the purpose for which it was allocated and according to the sanctions and they are not exceeded—is emphasised. But there should be adequate emphasis on management and planning aspects. Management involves the use of budgeting authority at both the agency and central level to ensure that efficient use is made of staff, equipment and other resources in the conduct of the authorised activities. The central and agency here refer to the State Government, agricultural university, department, college or research station depending upon the framework of analysis. Thus if the State Government Agricultural Department is a central agency, agricultural university is the agency level, on the other hand if agricultural university is the central level agencies or departments, colleges and research station. In this kind of management oriented budgeting the focus is on agency outputs—what is being done or produced at, what cost and how that performance compares with budgeted goals. It will be seen that for this kind of budgeting there will be work load measurement, how much it has costed per unit of output and what exactly is the output produced. Incidentally it is necessary to point out here that many of the State Government Departments have already adopted this kind of performance budgeting and therefore it is essential for the controllers of agricultural universities to become familiar with this kind of performance budgeting. Thus under performance budgeting the focus will be on management.

In fact there are three dimensions to this performance budgeting or three aspects which are (a) structural aspects; (b) accounting aspects; and (c) analytical aspects. The structural aspects refer to the fact that the structure of the budget has got a great deal to do with the used to which it can be put because it gives only a certain kind of information, for example, the ordinary budget in the Government or university or a college is what is called a line item budget because under this budgeting there are the heads of accounts like the pay of officers, establishment, expenditure on equipment etc. For a very long time now in all countries of the world the dissatisfaction against this kind of line item budgeting has been increasing and it has been replaced by what is to be called is performance budgeting. The Administrative Reforms Commission of India also has accepted this criticism against the line item budgeting and recommended the adoption of performance budgeting. Even though the line item budgeting is also simultaneously prepared at present.

The major difference in regard to performance budgeting so far as the structural aspect is that there will be a programme/activity classificotion for each operation of department or organisation. This programme/activity classification at present is to be adopted by the individual organisation itself like the university and budgeting will be done on the basis of resources needed for achieving the objectives of each programme or activity. The same total resources will also be looked at from the point of view of the objectives on which they are going to be spent like salaries, purchases of equipment, purchases of seeds etc. A preliminary analysis of the objectives on which the expenditure is incurred will show even initially where the expenses are in correspondence with the objectives of the organisation.

The same total expenditure then will also be looked at from resource from which the funds will be received, namely, the different heads of account. In many State Government Departments this kind of change in the structural aspect of budgeting has already come about.

The accounting aspect of the change in budgeting referes to the way in which the transactions of the agency are classified. The Comptroller and Auditor-General of India has prescribed the heads of account for various accounts/activities. Under a recent scheme of integrated finances an attempt has been made to bring about uniformity in the classification of expenses both at the central and state level. According to which there are major heads and minor heads, which are common for the same transactions both at the centre and state level. Beyond the minor heads each agency is free to adopt its own method of classification.

The third and most important aspect of performance budgeting is the analytical one which refers to the necessity for analysing the activities on the basis of past performance and trying to find out how the efficiency in performance can be improved either by reducing the unit cost or by increasing the yield from the same, the expenditure of resources. Under this arrangement sophisticated techniques like cost benefit analysis or cost effectiveness analysis or other ways of evaluating activities like research extension etc. could be commissioned to other agencies or departments in the university and their results could be used in budget preparations. Yet another aspect of budgeting is planning which refers not merely to the process of determining objectives and revising them in the light of changing circumstances but evaluation of alternative programmes. The essence of planning is the consideration of the alternatives which are less costly or more efficient and under a system of programme budgeting or what has been called in some countries planning programming and budgeting system. The programme structure is evolved on the basis of such detailed considerations of alternatives. To give one example, if the objective is to increase yield from the farm it can be achieved through various methods of applying fertilizers or providing irrigation facilities and supply of seeds or credit, each of these methods will have to be adopted while taken upon the situation that exists on a particular point of time. Similarly if the informtaion regarding better technology is to be spread to a farmer various methods could be adopted. The choice of the method will have to be based on considerations of cost and benefit. Under a system of programme budget there is inbuilt device for doing this.

The above description of budgeting shows that budgeting is an important instrument of planning.

But it is also an important instrument for implementation. In fact this planning phase will be followed by an implementation phase under which the elements of financial manngement are:

(v) Incurring Expenditure;
(vi) Acquisition of Property;
(vii) Payment of Cash and Negotiable Articles:
(viii) Accounting and Book Keeping;
(ix) Auditing.

We shall consider each one of them in turn. The procedure for incurring expenditure as far as possible will have to be such that it is simple and every time a reference to higher authorities will not be required. But this calls for adequate powers consistant with the maintenance of a due sense of responsibility on the part of spending agency. In this context the rules regarding the delegation of powers with adequate safeguard at each level assume importance. Further the university being an agency which has to teach and undertake research as well as extension activities will have to acquire valuable properties of various kinds like costly equipment and there should be sufficient rules and procedures for the purpose of acquisition of property. The management of these valuable property is an important function which has to be properly carried out. There will be frequent necessity for payment of cash etc. and rules will have to be laid down adequately for this purpose also. Since the university is also having land and carrying on agricultural activities, it is necessary to have a proper system of accounting and book keeping. The books to be maintained would have been laid down in the Accounts Codes of the universities. Income, expenditure will have to be properly accounted for. At present audit is done by the representative of the Comptroller and Auditor-General and the findings of such audit reports or utilisation certificates will have to be properly taken into account in preparing budgets for subsequent years. ☐

Research Consultancy in Universities

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I was told in Manchester that a number of studies on computer hardware, computer software, harbours and docks are being carried out on behalf of industries from USA, Europe and Africa. One Indian company too has entrusted that university with the research on a very special problem.

One reservation for multinational or medium range industries for entrusting the research to universites is its fear of exposure of work. In a highly competitive market, this fear is well founded also. Therefore a safeguard is provided by the university by keeping specific areas of research as strictly secret.

Contract research involving various disciplines is also carried out within the university but these are large schemes for longer periods involving more than one company or firm.

Dr. E.J. Duff incharge of the research consulttancy service in Manchester University revealed that the university received 250 to 400 enquiries a year from industries and over two thirds of them matured into active research. One recent product developed by the university was an "image analyser" designed by the department of Medical Biophysics.

Besides research work, the research consultancy service also organises courses for workers, managers, technicians and engineers for familiarising them in new technology and application of the new technology. The commercial costing of this is very great and according to the Association of University Teachers in Britain, the British universities have provided professional training and research worth £1,000 millions a year. They have together produced inventions whose total commercial value exceeds £ 500 millions a year. ☐

(*Courtesy* : *The Hindu*)

An Experiment in Teacher Education

(*Continued from page 626*)

education, educational technology, adult education, girls' education and others.

The success of any educational reform depends on the quality of the teacher which, in turn, depends to a large extent on the quality of teacher education programmes. The Education Commission has rightly emphasized "a sound programme of professional education is essential for qualitative improvement of education. Investment in teacher education can yield very rich dividends because the finance resources required are small when measured against the resulting improvements in the education of millions". The Madhya Pradesh experiment is an endeavour towards radical reform in teacher education.

The sure way to catch a train is to miss the one before. In education, we have missed several. Here is a chance. ☐

(*Courtesy* : *The Hindu*)

Role Of Teachers In Population Control

V. Meera Reddy*

India's population is growing annually at the rapid rate of 2.5 per cent. Over 13 millions are added to our population annually. We are adding one Australia every year in terms of population. Eighty-nine member countries of the United Nations out of 130 have lesser population than the yearly increase in ours. Our present population is almost equal to that of the United States, the USSR, Japan, put together; but our land area is only about one-third that of America and only one-seventh that of the Soviet Union.

A suitably oriented system of education can facilitate and promote social change and contribute to rapid economic growth by training skilled manpower for specific tasks of development. What is perhaps more important is creating the requisite attitudes and climate. Even in the case of human fertility, there is a positive relationship between the education level and the preference for children. For instance, 1960-61 National Sample Survey findings state that the number of live-births for women of completed fertility who had primary school education was 6.6, while the average births were 5.0, 4.6 and 2.0 respectively for women who were educated upto middle school, matriculation and university.

According to a definition provided by the UNESCO in this context, "Population education is an educational programme which provides for a study of the population situation in the family, community, nation and world with the purpose of developing in the students rational and responsible attitudes and behaviour towards coping with that situation". It is a recent innovation and much experience has not been accumulated on this subject. Population education is useful not only in enlightening the people about various problems of population and its growth but also provides the necessary means to change the attitudes and behaviour of the younger generation.

One of the important features of our country's population is the predominance of young people. About 45 per cent of the total population are below 15 years of age. Among this section again a significant part will become parents after a few years. It is exactly this group, the future parents, that must be made aware of the population problems. With this in view, a massive programme of population education should be startd in the schools and colleges so that students could take right decision about the size of their future families.

The education programme should give the learner an insight into the totality of the issues involved including the nature, causes, determinants, consequences of population growth both at the micro and macro levels, the nature and dynamics of the reproductive process and finally the possibilities of planning the family size and population growth. The acquisition of such an insight may develop the desired understanding and attitudes that contribute positively to rational decision making at the micro and miacro levels as well.

The success of any such project depends largely upon the efforts of the individual class teacher, not administrators or planners at the top. Unless and until he is involved deeply in this process at all stages and levels, population education may not prove to be any more than of ornamental value. He is pivotal to the successful implementation of any such programme. His orientation and training are very important. Any planning of the programme should take into consideration this dimension and give it its due share and importance.

Until and unless a teacher himself is convinced, he cannot demonstrate any lessons effectively and will not be in a position to deliver the goods. This necessitates training of convinced and committed teachers about the imminent need of the population problem vis-a-vis the future prosperity of the country. Our teacher training institutions must take up population education as an essential and integral part of their pre-service and in-service training programmes. In this matter the National Council of Educational Research and Training through their extension service departments should come to our rescue. The State Institutes of Education and Research (SCERT) and other such agencies responsible for in-service training of teachers could also suitably restructure, reorganise and recast their present programme to include population education as an important item and design an integrated syllabus for the purpose.

In rural India where 70 per cent of the people live in abject poverty, illiteracy, ignorance and innocence and where the growth rate of population is higher than in their urban counterparts, the role of the teacher in providing population education to the dropouts, the non-entrants and adult illiterates must be given priority. The energies and the enthusiasm of the youth who are on the threshold of their reproductive ages in the countryside must be tapped and in the process we are likely to realise rich dividends. The adult literacy programmes can serve as a useful channel for spreading a deeper awareness of the hazards of unchecked population growth. The countrywide adult literacy campaign of the present Government must include education for population awareness and family planning in their curricula, for one of the basic aims of functional literacy is to impart to the adult learners, the knowledge and the information which would inculcate in them the new values which will have an immediate application and

(Continued on page 640)

Director, Population Control Motivating Cell, Visvodaya Govt. College, Nellore.

CONVOCATION

Challenges of present day technical education

The Engineering Education in Banaras Hindu University completed sixty years and the Institute of Technology celebrated Diamond Jubilee during the second week of October. As part of Diamond Jubilee celebrations, the Institute of Technology held a convocation. Following are the excerpts from the convocation address delivered by Prof. B. Sengupto, former Principal of the Institute (then college).

"During my long association with students, I have found that the problems facing the students and urging them to the path of strife and indiscipline are few and are not insolvable. These problems are usually centred around teaching or lack of it, examination system and problems of employment after graduation. One more problem has come up now, viz. job opportunity and job satisfaction. Students entering a College of Technology are by far a more intelligent section of the student community. They want to go through a course of studies to "learn" and to be "taught". They expect us, the teachers, to teach, not to dictate from text-books and old notes. They complain that some teachers have nothing new to give them. Whatever they teach could easily be studied by the students themselves from text-books. It is not unusual to learn from the students that some teachers are seldom in the Departments or in the University, they are busy outside. Instances of postgraduate students chasing their teachers outside the University campus for guidance are also not rare. These malpractices will have to be removed, if we want to satisfy the students that their basic demand, in respect of teaching, is fully met. Students complain that the subjects they are made to go through, the way they are taught, do not quite meet their requirements in life. Review and modification, from time to time, of the course of studies, their course content, scope etc. in tune with fast changing technology with consequent change of employment pattern and demads from the society, seem to be absolutely necessary.

Most serious among the complaints made by the students is against the age-old eximination and evaluation system, which, according to them, is rigid, attaches more importance to memorising than to appreciation and understanding, fails to attach any importance to class work, laboratory work, tutorial etc. and often results in very high percentage of failure. The teachers and University authorities, on the other hand, point out that, with a large number of students admitted into the teaching institution, it is not possible to give individual attention and to introduce continuous evaluation to go hand in hand with the teaching process.

To a technologist, who is conversant with modern mass production techniques, this argument does not appear to be convincing. He is aware that while producing a large number of high quality products, continuous inspection and test during the process of manufacture brings down the rejection rate and wastage and allows him to take corrective measures in time. What is true for modern mass production may equally apply with success in the field of education. To my mind, introduction of continuous evaluation during teaching with a large number of tests and tutorial will eliminate unnecessary high failure rate and ensure good education and training. This, I am sure, will be appreciated by the students.

The last problem posed by the students still remains unsolved and acute as the present day technical education is not geared for employment, with the result, that students coming out of technical institutions find it difficult to get suitable ready employment after graduation. Here, I would like to draw a line of demarcation between education and training. Should a degree in technology give a student a broad based knowledge and proper understanding of the subject or should it give him occupational competence ? Surely, a cobbler, plumber or a mechanic, deft with his hands, will find it easier to secure a job. He has competence and confidence to carry on with his trade but not so a technologist. The graduates in technology will, however, find it easier to adapt himself to any situation provided he is given a course of training in the field in which he is employed. Unfortunately, the present day higher education has made the students status-conscious, ambitious and averse to physical labour and training, which alone can give them confidence and competence. It has alienated them from the people they are supposed to serve.

The student coming out of the Technical Institutes, somehow, gets away from the real situation in the country, its capacity to pay, its meagre financial resources and looks towards western horizons for suitable employment and job satisfaction. We are aware that we are faced with serious unemployment problems. Can we not therefore, use our graduates in technology as instruments of production of employment opportunities for our people ? Can the Engineering Colleges and the Institutes of Technology turn their attention to production of technologists with necessary technical competence and skill and, above all, leadership in addition to education. This may help the students, turned out of these institutions, to be easily absorbed by the industry, help them to start new industries and open up new avenues of employment. These will, in their wake, improve the economic position of our country and will enable to pay more to the technologists and workers. Till then, our students should take up their jobs as a social responsibility. Only then they will be able to make their presence as technologists felt, their leadership accepted by the industries, people and others around them.

During my long career as a teacher, I have often felt that we the teachers have been largely responsible for students' indiscipline. We, as teachers, have failed in our duty towards students with the result that they have scant respect for us. Instead of being with them, we have moved away from them. We have not tried to build their character by our own example and precept. Students are sceptical about our competence to teach, our capacity to guide research and higher studies. It is for the teaching community to re-establish themselves as teachers or *gurus* by their own learning, devotion to studies and research and their personal conduct. Even with the present-day student indiscipline, it is rare to find a good teacher being disrespected in class rooms or outside class rooms. It is often said that a teacher is the kingpin in an educational institution. This vital part must play its role satisfactorily by guiding the wheel of a vehicle properly and leading the occupants of the vehicle—the students—safely to their destination.

The teachers in technological institutions should accept public service, consultancy service and also extension service as a part of their job in addition to teaching and research. This will help the teachers, research workers and students to get together and to understand and appreciate the problems of the world around them. Ability of teachers to solve industrial and socio-economic problems will enhance their prestige with the students, the people, the government and the industry around them. It will, at the same time, bring the industry and other organisations in close contact with the technical institutions to which the teachers and the students belong. As for job opportunity and job satisfaction, I think, they would follow.

Time and again the teachers have forwarded their charter of demands, the basic feature in all these demands being rise in their salary scales and pay. It does not make any mention about their obligation to the students and the community, nor does it lay any stress about improvement of teaching, laboratory facilities, research facilities, improvement of examination and evaluation systems, new development programmes in which, they are afraid, they will have to put in more effort. It is rather unfortunate that in spite of the recent rise in salary of teachers due to introduction of the U.G.C. scales of pay, the teaching community has failed to improve the situation. Teaching, research, guidance to research of students, student-teacher relations remain virtually the same. The value of collaborative, transdisciplinary research, consultancy service, extension service, etc., so vital for the institution, teachers, students and the people, still remains to be apprecieted by the teaching community.

I am happy to have read from the reports of the Institute that there are several major transdisciplinary R&D projects with grants of about rupees two crores from important agencies like the Electronics Commission and the Department of Science and Technology, Govt. of India, and that the students and the teachers are taking an active interest in the establishment of the *Industrial Consultancy Centre and the Prototype Development Centre.* The University Grants Commission has given liberal grants for senior faculty positions, library, equipment and buildings during the Fifth Plan period for helping the Institute to raise its standard in instruction, training and research and I am sure that this assistance coupled with hard work and dedication of students and teachers will bring our Institute to its pre-eminent position. I would appeal to my colleagues, the teachers, to realise that demands cannot be one-sided. There are others, the students and the people of India, who also look towards the teaching community with their demands for good clothing, housing, employment and solving other problems in their lives. It is the duty of teachers to solve such problems and fulfil these demands.

While I have tried to highlight the teachers' responsibilities and their short-comings, I must admit that the teaching community has not received its due entitlement of appreciation. The teachers have often been blamed for all maladies of present-day education, little realising that education is, in essence, team work and cooperative endeavour where Government, Educationists, teachers, parents, political parties and the students have all to play a proper part. This carried out and achieved, the institutions of technology will be able to fulfil their obligation to the nation and the future of technical education in India will be admirably assured.

Some years ago, the alumni used to feel sad when they read that their *alma mater* had lost not only its All India character in the technical departments, particularly after the establishment of the five Indian Institutes of Technology and other Regional Engineering Colleges, but also its pre-eminent position. I am very happy to know that over the last few years, you have been able to overcome these hurdles and that with the inclusion of your Institute in the Joint Entrance Examination system along with the five Indian Institutes of Technology, its All India character has been restored and the standard have improved to such an extent that a large number of our graduates is being offered employment even before they have taken their final examination." □

CAMPUS NEWS

Roorkee organises surface science symposium

A galaxy of scientists and engineers representing eight renowned institutions of the country assembled recently in the Roorkee University campus for a symposium on surface and inter-face properties of materials. The symposium was presided over by Mr. H.C. Katiyar, Director, Metallurgy Group of the Bhabha Atomic Research Centre, Bombay and was organised under the auspices of the Materials Science Committee of the Board of Research in Nuclear Sciences, Department of Atomic Energy, Government of India. The other institutions represented at the symposium were : the Vikram Sarabhai Space Centre, Trivandrum; the Tata Institute of Fundamental Research, Bombay; the National Chemical Laboratory, Poona; Universities of Roorkee and Bombay; the Indian Institute of Science Bangalore and the Indian Institute of Technology, Bombay.

In his presidential address, Mr. Katiyar said "Surface science is a relatively new field, which is now coming in its own due to availability of special techniques to study the surface on an atomic scale. It is inter-disciplinary in nature and involves researches in the fields of chemistry, physics, metallurgy and instrumentation." The most modern research tools required for this science, he pointed out, were now available within the country. Stressing the importance of the subject in an applied sense, Mr. Katiyar observed that almost every conceivable processed seemed to take place at the surface or iner-face and the understanding of surfaces could lead to better performance of existing materials.

Thirty-five papers on surface and inter-face properties of materials were presented at six technical sessions of the symposium.

Four new PG courses for Anna University

The Perarignar Anna University of Technology has instituted four postgraduate diploma courses in the field of civil engineering from the academic session 1980-81. These courses are in (1) Remote Sensing, (2) Environmental. Pollution Control Engineering; (3) Solid Wastes Engineering and Management; and (4) Environmental Systems Engineering.

The course in remote sensing is being introduced for the first time in the country. It includes a detailed study in electronic surveying, computer programming, cartography for earth scientists, engineering and resources planners. Several national agencies have agreed to collaborate in running the course. Those who have showed their willingness for cooperation are: the national remote sensing agency; the Indian space research organisation and the ground water wing of the Tamilnadu Public Works Department.

The qualifying degree for admission to the above courses is a Bachelor's degree of Engineering/Technology in the relevant field with 3 years experience in the appropriate field. The courses are aimed at developing professional attitudes, research competence and skills. They are highly practical and offer adequate opportunity to study in depth and to seek solution to the related problems. The duration of the course is one year comprising two semesters.

Ford Foundation aid to preserve old manuscripts

An ambitious project of the Mysore University for scientific conservation and microfilming of old manuscript collections with assistance from the Ford Foundation has been cleared by the University Grants Commission. The proposal, which envisages a $70,000 aid by the Ford Foundation, will now go before the Education Ministry for approval. But according to authoritative sources, this is only a formality since the Education Ministry has already agreed to it in principle. The three-year programme of conserving manuscripts available with the university and other repositories in the State, is estimated to cost Rs.6.4 lakhs of which Rs. 5.6 lakhs will be met from the proposed Ford Foundation Grant. The balance will be met by the university. The Oriental Research Institute of the Mysore University which has the largest collection of manuscripts, will undertake this programme. The institute has about 60,000 manuscripts, of which 22,000 are on palm leaf. The bulk of them are works in Sanskrit language. The Institute of Kannada Studies of the Mysore University, has a collection of 6,000 manuscripts in Kannada. In addition a number of manuscripts in various languages and on different subjects are available in the State. According to a conservative estimate, the number will be over 250,000.

The Oriental Research Institute, which has been engaged in collecting, preserving, cataloguing and publishing important Sanskrit manuscripts is reported to have felt the need for more resources and accommodation, to fulfil its task effectively. The need to strengthen the facilities for preservation and reprography has also been felt. The Ford Foundation has offered assistance not only to the Mysore University, but also to the Sampurnanand Sanskrit Viswavidyalaya in UP for scientific conservation and microfilming collections of old manuscripts.

New equipment to record earthquakes

By 1985, the entire Himalayan region and the Indo-Gangetic plain extending up to the North-East would be installed with an array of seismic equipment to record strong earthquakes. The

Department of Earthquake Engineering, Roorkee University, which is carrying out the programme under the Indian National Strong Motion Instrumentation Network, has completed the first phase. It has so far installed 16 strong motion accelerographs and 80 structural response recorders.

The second phase of the programme would be launched soon. According to the head of the Department of Earthquake Engineering, Prof A. R. Chandrasekaran, the programme envisages the installation of 100 strong motion accelerographs and 500 structural response recorders. The instruments have been designed and made by the department itself.

At present the country does not have such a facility and the existing seismographs have a tendency to go out of scale in the event of a strong earthquake. The department would also undertake to set up a dense array of 50 equipments in the Kangra valley at a space of 5 km to 10 km as per the decision of the Indo-U.S. workshop on natural disaster held at New Delhi in December, 1978. He said the USA was prepared to ship the equipment in a year's time but the project is still to be cleared by the Government.

Prof. Chandrasekaran said the department had offered consultancy services for 25 projects covering a wide range like port construction, irrigation canals, dams, atomic energy projects, petroleum refinery, heavy electrical engineering units, etc. It currently has over 40 projects in hand covering both public and private sector. Prof. Chandrasekaran said the department was of its only kind in the country and was one of the five in the world. There was need to accord a proper status to it and declare it as an advanced institute of earthquate studies. He said the research activities could be further expedited and newer areas explored but that required greater financial assistance.

UPSC to review exam syllabi

The Union Public Service Commission has set up a subcommittee to review the syllabi for its important examinations, in particular the civil services examinations. The review has been ordered following the receipt from various quarters of represenations for inclusion of additional subjects in the civil services examinations.

To begin with the UPSC has decided to reintroduce the same subjects for these examinations, which were in the scheme of the old IAS examination. The subjects are: statistics (both preliminary and main exams), agriculture to be separated from veterinary science and animal husbandry (both preliminary and main exams), sociology syllabus to be simplified to include social anthropology content (preliminary exams), language and literature of Pali and Chinese (main exam) and anthropology (main exam).

In line with its policy of modernising practices and procedures in the Commission, the UPSC has recently commissioned with the assistance of the British Council two pieces of electronics optical mark readers. This equipment is capable of scoring the answer sheets of the candidates at a very fast rate.

The Commission has also decided to open new examination centres for its important examinations in the North East region next year. These centres will be located at Itanagar (Arunachal Pradesh), Jorhat (Assam), Imphal (Manipur), Aizwal (Mizoram), Kohima (Nagaland) and Agartala (Tripura). The UPSC has requested the concerned State Governments Union Territories to take charge of the actual conduct of these examinations.

UPSC to set a model for objective tests

Prof S. Sampath, Member of the Union Public Service Commission (UPSC) said in Bangalore that the endeavour of the UPSC was to attract good candidates with potential calibre, particularly from rural areas to the Indian Administrative Service and other services of the Union Government. Presiding over the inaugural session of a five-day workshop on objective test construction, organised by the UPSC in association with the British Council he said, the objective tests were being designed and adopted for selecting the meritorious candidates. In this context, he stressed the need for high quality question papers. The UPSC was striving to build and demonstrate a model for objective test for other institutions and agencies. Based on previous experience, the UPSC was trying to overcome the shortcomings noticed in the objective testing.

Dr Jouston, leader of an expert team from the British Council, emphasised the role of modern techniques of assessing the merit of the candidates appearing for tests. He called for adopting effective examining techniques in all areas of education.

The workshop was inaugurated by Prof. L.S. Chandrakanth of the Indian Institute of Management.

The course, meant for senior university teachers, is one of a series being organised in various parts of the country to orient teachers to objective type examination conceptions and construction in view of the increased reliance on these kinds of testing systems being adopted by the UPSC.

Prof. Chandrakanth said that reliability and validity of testing systems were the two main factors for their ultimate effectiveness. He felt the UPSC had a challenging task ahead of them in this context, given the vastly increased numbers of candidates for UPSC examinations. He said the present methods of examinations in Universities were highly defective and in dire need of reforms. The valuation in the conventional examination system was highly subjective and studies had shown that the examiners often gave different marks for the same answer sheet on different occasions. The objective type of examinations on the other hand, of the multiple choice type or of short-answer type possessed the merits of reliability and of measuring the educational attainments of the students in a practically fool-proof manner·

The valuation would not be affected by subjectivity as the correct answer is pre-determined.

The workshop was attended by over 60 participants from the various State Public Service Commissions, the Staff Selection Commission, New Delhi, and various universities and academic institutes from the Southern States.

Geological teams for Himalayas

With 53% of the country's area still to be mapped geologically, the Geological Survey is speeding up its work in the field season which began on October 1. Mapping in the north eastern region was affected last year. The Geological Survey of India has therefore taken up an alternative programme to map the area. During the current season, 340 geologists will be sent out for mapping operations, compared to 329 last year. The GSI hopes to map an additional 110.400 sq. km. during the year, against 90.177 sq. km. mapped last year. The total area of the country is estimated to be 3.2 million sq. km.

Expeditions will be organized during the current year to map the high altitude and inaccessible areas in the Himalayas. Most of the mapping programmes will be preceded by photogeological reconnaissance. The expeditions in the Himalayas will also carry out studies on snow, ice and glaciers which are essential for water resource evaluation and management. The studies on some of the important Himalayan glaciers, taken up some years ago under the International Hydrological Programme, will be continued during the current season. Beginning with only one glacier Gangotri in U.P., the programme has now been extended to six glaciers. Investigations of avalanches in the Sonamarg area of Kashmir have resulted in the collection of valuable data necessary for the safe designing of the proposed hydro-electric project at Humg.

Last year, the offshore mineral exploration and marine geology division of the GSI carried out sampling in an area of 8,800 sq. km. of the continental shelf between Machilipatnam and Vishakhapatnam in collaboration with the National Institute of Oceanography. Surveys were also conducted for the location of potential areas for exploration of diamonds in the coastal and offshore areas of Andhra Pradesh. The marine geology division also conducted studies of the Ganga delta. Offshore sampling of sediments in the Hooghly river mouth was completed. The work on the Ganga delta will be continued this year.

AU develops radar to detect meteors

A unique radar of the only kind in Asia that can detect every single meteor entering the Earth's atmosphere has been built at the University of Waltair in Andhra Pradesh. While speaking at the National Academy of Science conference in Allahabad Prof. Ramachandra Rao, Vice-Chairman of the University Grants Commission said the "meteor doppler radar" can tract the trail of even those meteors not visible to the naked eyes. Each year millions of meteors bombard the Earth. The completely automatic meteor tracking radar has enabled the measurements of "drifts" in the Earth's middle atmosphere that was hitherto not possible. Prof. Rao said in his presidential address on "recent advances in space physics." that astronomers were also busy planning to probe Halley's Comet scheduled to arrive near the Earth in 1985 after an interval of 76 years. He said a satellite called Glotto will be launched by foreign astronomers to intercept the comet and bring back a sample of the comet materials that may hold the key to the origin of the solar system. He said another study envisages a similar rendezvous with the "Temple 2" comet expected to visit the Earth in 1988. Recounting the major advances made in space physics Prof. Rao said that the planet Jupiter behaves like pulsar (emitting radio signals in pulses) and planet mercury is 70 per cent iron that can be exploited by earthlings.

New PG courses in colleges of Mangalore

Prof. Sheikh Ali, the newly appointed Vice-Chancellor of Mangalore University said that the university would adopt a liberal policy on the starting of postgraduate courses in private colleges. He was inaugurating the Student' Council of Dharmasthala Manjumatheswraa Law College in Mangalore. He said he would not mind opening postgraduate courses in other private institutions provided the colleges concerned fulfilled the conditions prescribed by the university. Prof. Ali pointed out that while starting a new PG course in a college the university would have the final word regarding the staff pattern, selection of subjects and syllabus. He made it clear that no capitation fee would be collected for such courses. He also said that the number of facilities at the Konaje campus would soon be increased to seventeen from seven and among subjects like Chemistry, MBA, Statistics, History and subjects of regional interest like Tulu, Konkani and Kodava langauages, Yakshagana and family life and population control would be offered for postgraduate study.

Medical institute for Kashmir

Noticeable progress has been achieved during the last five years in the field of health sciences by the Government of Jammu and Kashmir. The setting up of the National Institute of Medical Sciences in Srinagar is the latest move in this direction. The Institute is expected to provide treatment facilities for all kinds of ailments besides having sophisticated diagnostic aids for the treatment of cancer, heart diseases and brain problems. The Institute is likely to be completed by 1985 and would have several firsts to its credit. It would have a special U-arm type of machine for the diagnosis of cardiac problems costing Rs. 3.7 million, the first of its kind in the country.

Another 'first' would be a computer treatment planning machine for the treatment of cancer. Dr. A.K. Nagpal, Project Director of the Institute, said that it would be next only to the Tata Memorial Hospital, Bombay, in the facilities available and in providing sophisticated treatment.

Karnataka to assess engineering facilities

The Karnataka Government proposes to set up an expert committee to study the facilities available in the engineering colleges in the State. Mr. G. B. Shankar Rao, Education Minister of the State, said in Bangalore that the committee would go round the State, inspect the colleges and find out if they had fulfilled the conditions laid down for them. The intake of the colleges next year would be strictly regulated on the basis of the report of the committee which is expected to send its remedies by the 31st March of the next year. A similar committee which was set up earlier had made a study of the conditions prevailing in the colleges. Though twelve colleges were started this year, the last year's intake of 7,400 had been maintained by reducing the strength of the existing colleges. Mr. Rao who was in favour of polytechnics said that eight new polytechnics had been sanctioned and another four were proposed to be sanctioned, taking the total to forty five. The intake of polytechnics was 5,000 which could be raised to a higher number.

New committee for silent valley project

A joint Centre-State committee has been set up to decide whether Kerala's Silent Valley Project could be taken up without significant ecological harm. The members are nominated by the Centre and Kerala Government. Prof. M.G.K. Menon would be the Chairman. The other members of the committee are; Dr. H. K. Jain, Director, Indian Agricultural Research Institute, New Delhi, Professor A. K. Sharma, President. Indian Science Congress Association and Professor of Botany, Calcutta University, Dr T. N. Ananthakrishanan, Jawaharlal Nehru fellow, Loyola College, Madras, and Dr Madhav Gadgil, national environment fellow, Indian Institute of Science Bangalore (nominees of the Centre) and Professor. A Braham, Chairman, Kerala State Committee on Science and Technology, Dr K. Raghavan Nambiar, Environmental Engineering. Professor, Engineering College, Trichur, the Commissioner for Electricity, Kerala Government and the Chairman of the Kerala State Electricity Board.

Workshop for writing objective type items

A workshop for writing objective type items in General Medicine for Part I of Member of the National Academy of Medical Science examination was organised by the National Board of Examinations in collaboration with the AIU at Simla for a period of seven days i. e. from 11th to 17th Oct., 1980. All the workshop participants were senior medical faculty from different medical colleges from all over India. The purpose of the workshop was to get these medical teachers comprehend the science of item writing involving three major types Multiple choice (1 in four), Multiple True/False and Assertion/Reason type. Participants were exposed to basic principles of item writing, item prevalidation and item analysis. Dr. Sanderson from the Royal College of Physicians, London & Prof. V. Natarajan of the AIU were the resource faculty to guide them firstly with lectures and illustrations and later in group discussions to finalise the items. In all, thousand items were written by the participants for purposes of constituting a bank of items from which Part I General Medicine Paper consisting of 150 items will be chosen. The Workshop also proposed certain follow-up action and suggested a plan of action to put this into practice.

The National Academy in its recent meeting has adopted all these recommendations and resolved to put them into practice. Dr. Ahuja from the AIIMS was the coordinator for this Workshop.

Next Unesco council in India

India will host the first meeting of the Inter-Governmental Council on Development of Communication of UNESCO in March 1981. Mr. Vasant Sathe, Minister for Information and Broadcasting, said that the Director-General of UNESCO, Mr. Ahmadou Mahtar M'Bow, had tentatively agreed to hold this meeting in India.

Film Institute to be more autonomons

The Information and Broadcasting Ministry has accepted the principal recommendations of the Satischandra Committee that the President of the Advisory Committee and the Chairman of the Governing Council of the Film and TV Institute should be one and the same person and should be from cine industry, Mr. A. K. Dutt, Secretary in the I & B Ministry said that the government proposed to grant more autonomy to the Institute.

Research on herbal medicines stressed

The Union Minister of State for Health and Family Welfare, Mr. R. N. Laskar, has called for greater corporation between the pharmacologists and those engaged in ayurvedic and unani medical practice for scientific evaluation of indigenous herbal medicines. Speaking at the valedictory function of the 13th annual conference of the Indian Pharmacological Society in Jammu, Mr. Laskar said that India had many plants of medicinal value which had been exploited since ancient times. He added there was an ample scope for doing more work in this field. About 500 delegates attended the three-day conference held at the Regional Research Laboratory in Jammu.

Bihar to set up adult education centre

Sixty-two new projcets for adult education would be launched in Chotanagpur and Santhal Parganas in Bihar. The projects envisaged setting up of 18,600 adult education centres in the current financial year at an estimated cost of Rs. 7 crores.

News from Agril. Varsities

Intense research by farm varsities

Agricultural universities throughout the country are intensifying laboratory and field studies, on the use of bio-fertilisers, as a substitute to artificial fertilisers which has been found to be harmful to the ecology.

A spokesman for the Association of Microbiologists of India, said in Bombay that nitrogen fixation in the soil formed an important part in the growth of foodgrain crop but the use of artificial fertilisers was not only costly but at times found to be harmful to the ecology, At the recent conference of microbiologists a group discussion on 'microbial technology in agriculture will be held when scientists from India and abroad would be discussing the various aspects of the problem in depth.

Rhizobium spirillium are the two main microbial agents in the soil which fix nitrogen for the crop in the soil.

While rhizobium, settles itself in the roots of the crops such as peas, grams and dals and fixes nitrogen for them by attaching themselves to the plant, spirillium fixes nitrogen mainly for the cereal crop, in the root area without attaching itself to the root.

Field tests are being conducted on the use of dried rhizobium and spirillium and other microbial agents to find out how useful they are in nitrogen fixation in the soil without disturbing the soil ecology. Nitrogen is the key substance for the creation of protein in plant life which gets transferred to human beings. Eighty per cent of this gas is fixed in the soil for plant absorption by microbial agents at room temperature less than 20 per cent is produced artificially through a process which requires 1000 degrees centigrade temperature. A micro-scopical amount is produced by lightening which mixes atmospheric nitrogen with hydrogen to form ammonia. When an agriculturist rotates his crops between cereals and dals, he is in fact making use of the nitrogen already fixed in the soil by a previous crops of dal and similar crop, where rhizobium acted as microbial agent to fix nitrogen. The roots of this previous crop retain nitrogen in the soil to be used by the next cereal crop.

Swaminathan emphasises genetic improvement

Dr. M.S. Swaminathan, Member, Planning Commission, while delivering the Second Jubilee lecture of the National Botanical Research Institute, said in Lucknow that the horticulturists should pay greater attention to the genetic improvement and better management of horticultural crops in the country. It was very essential for increasing the per hectare yields of fruit trees and vegetables. He said that horticulturists can play a significant role in improving nutrition, income and employment of the people. It was essential that the horticulturists should evolve improved varieties to increase production of these important crops. Hunger in the human population in India, largely arose from inadequacy of calories in the diet. This, he said, could, to a great extent, be prevented by increased intake of fruits and vegetables. Noting that only horticultural crops of commercial importance had attracted greater attention from research, Mr. Swaminathan pleaded for research on other horticultural crops which had received practically no attention. In fact, he said, the horticultural assets of our country had been under severe stress either due to uncontrolled grazing and felling or to diseases of various kinds. He cautioned the scientists that if immediate arrangements were not made for the collection, classification and conservation of the genetic wealth in fruit trees, vegetable genotypes in citrus, mango, etc. were in danger of extinction.

Dr. T. N. Khoshoo, Director, National Botanical Research Institute, while welcoming Dr. Swaminathan, said that the institute was primarily concerned with agro-botany and utilisation of non-agricultural economic plants and with discovering new vegetable raw material of industrial value. Dr. Khoshoo mentioned that as a result of the survey conducted by the Institute in some districts of UP, a number of pollution resistant plants had been identified which could be utilised for landscaping in polluted areas.

JNKV breakthrough in wheat rust resistant varieties

With a view to minimizing production losses due to rust disease in wheat, Jawaharlal Nehru Krishi Vishwa Vidyalaya has evolved four new wheat varieties which are resistant to rust. These varieties have already been released by the State Variety Release Committee in October last for general cultivation.

Tawa 267—It is suitable for high fertility timely sown irrigated conditions. It is a double dwarf wheat with wider adaptability in Madhya Pradesh. Grains are amber, hard and better than Kalyansona grains. It is resistant to black and brown rusts. It matures in about 120 days and yields 35-40 q/ha.

Tawa 215—It is a two gene dwarf suitable for high fertility, and timely sown conditions. It is suitable for durum areas with irrigations. It has got resistance to black and brown rusts. It matures in 120-125 days and yields 40-45 q/ha.

Jairaj—It is a durum wheat. This is suitable for medium fertility conditions and is slightly taller than Tawa-215. Grains are amber, lustrous and hard. It possesses high degree of resistance to black and brown rusts. It matures in 115 days and yields 30-35 q/ha.

Narmada-195—This variety is suitable for rainfed low fertility conditions. There is no effect on grain filling under moisture stress conditions. Seeds are bold hard and lustrous. It is resistant to prevalent traces of black and brown rusts. It matures in about 125 days and averagely yields 13-14 q/ha.

ICAR restricts foreign travels

The Government would be putting certain restrictions on agricultural scientists going abroad frequently to attend conferences or for further studies. This announcement was made by the Union Agricultural Minister Rao Birendra Singh at a special general body meeting of the Society of Indian Council of Agricultural Research held recently in New Delhi. The Minister said that the scientists would be required to execute a bond to serve the country for three years after completing the studies abroad. It was in the national interest not to allow scientists to go abroad frequently, he added. It was the duty of the ICAR to create congenial conditions of work for the scientists but felt that it was the duty of the scientists also to attend to their work with discipline and devotion instead of seeking personal publicity. Scientists should be given freedom to do research. He wanted to have a full discussion on the results of lab to land programme for transfer of technology as very little has been achieved in this area. He stressed the need to check adulteration of inputs like fertilisers, pesticides and seeds. He wondered how adulteration took place and in this context regretted that even basmati rice meant for export was adulterated at times.

Fisheries faculty for Pantnagar

The G.B. Pant University of Agriculture and Technology would soon be developing its fisheries faculty at a cost of Rs. 65 lakhs during the Sixth Plan period. At present the university has only a small unit which is engaged in seed multiplication experiments and fish farming. The set up is inadequate to undertake the training research and development work to meet the requirements of the State Fisheries Department. The Sixth Plan perspective envisages a massive programme of education, training and extension to cover seventeen districts of the State where an inland fisheries project would be launched with World Bank assistance. This programme is aimed at helping the beneficiaries in fisheries work who belong to the poor and backward classes. The proposed faculty will arrange two or three courses every year to train fifteen to twenty people in each batch. It will also undertake basic operational research so as to provide appopriate technology to the fishermen for development of fish farming.

ICAR vaccine centre for Srinagar

The Indian Council of Agricultural Research will soon establish a plant disease diagnostic and vaccine producing centre and a soil conservation research [centre in Srinagar. The apple growth of late has assumed a major role in J & Kashmir and one of the problems facing the ICAR is to evolve scabresistent apple plant material. The ICAR has also agreed to depute state horticulture experts to different centres for studies and training in controlling the plant diseases prevalent in the State. The rabbit and chinchilla breeding programme in the State has also been sanctioned and this will be a part of the "lab to land programme" being financed by the ICAR. It will help the state in preserving the ecological balance.

World Bank team visits HAU

A three-member World Bank team led by Dr. H. Linda visited the cotton fields of the Haryana Agricultural University. The team was impressed by the agronomic trials conducted by the university on cotton. Dr. M.S. Airon, chief scientist, cotton department, said that they had grown more than one lakh plants per hectare by doubling the seed rate and reducing plant to plant distance within rows. Normally, 15,000 plants are grown per hectare.

News from UGC

Project on phosphazenes

A collaborative research project. sponsored by the University Grants Commission, between the Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore and Birkbeck College, London, U.K. has yielded promising results. The project has been extended by the Commission for another five years i.e. till April next year because of its industrial potential.

The Commission has approved grants totalling six lakh rupees for the project which deals with phosphazenes, a group of phosphorus-nitrogen compounds. These compounds have been the subject of special study by several other developed countries also. But the progress achieved by the Indian collaborative project is stated to be far in advance of others.

A breakthrough achieved under the Indian project is the discovery of bicycling phosphazenes. The potential areas of application would include flame retardance for textiles. The structural features of these compounds are so novel that it is now planned to test them biologically over a wide area of applications like pesticides plant growth, pharmaceuticals etc.

The Indian Institute of Science, Banaglore, has already suggested to the Indian Council of Agricultural Research a collaborative programme involving agricultural chemists and soil scientists at the University of Agricultural Sciences, Bangalore. Another area of collaboration is with the Indian Space Research Organisation on the possible application of phosphazene polymers in space technology.

The work done under the project has so far been presented in three international conferences held at Venice, Lund, and Prague.

The Science Research Council of the University Grants Commission has said that the project has yielded processes and products which are significant for the development of agriculture, health and textile industry.

Water resources studies programme

The University Grants Commission has accepted in principle a proposal from the Bihar College of Engineering, Patna, to introduce a water resources studies programme for the State.

The UGC's concurrence follows the report of a visiting committee to Patna which included water resources experts from Roorkee University, Central Ground Water Board and the Central Water Power Research Station. The Committee said that there was a felt need in Bihar for such a programme in the light of varied problems faced by the State. This was specially so because of the lack of an institution to identify the problems and to educate field engineers in planning and management of water resources.

A course of M.Sc. (Engineering) in Water Resources Engineering was introduced in the Bihar College of Engineering in 1978. The college has also been handling some of the problems entrusted to it by the Irrigation Department of the State Government.

The Committee said it was necessary to start a nucleus for tackling water planning and management problems especially those relating to flood control in the region.

The Bihar College of Engineering, which wants to approach the Ford Foundation for financial assistance for the programme, says that it will help in fostering an institutional framework for better management and utilisation of water resources.

Science & Technology

Indo-German collaboration in space research

India-West Germany Space Research collaboration in the next six to seven years will cover aspects of mobile communication, of time distribution, and navigation via satellites besides continuing the present joint project altitude sensing techniques. As a result of the talks the seven-member Indian delegation from the Indian Space Research Organisation (ISRO) had with the German Space Research Agency (DFLR) last month, a number of specific areas had been identified for the next six or seven years. Another step in Indo-German collaboration would be joint campaigns in the field of earth research with micro wave remote-sensing devices. The German contribution was expected to comprise active and passive micro wave sensors, while India would provide an aircraft carrying these sensors, and would organise the campaigns. The evaluation work would be done by Indian and German scientists togteher and the results would be shared.

Meanwhile, remarkable results have been achieved by Indian scientists during their training period and the ISRO itself had made major advances for solving space problems by its own resources. The Indo-German co-operation in space research started sometime in 1972—less than a year after an inter-Governmental umbrella agreement was signed on peaceful uses of atomic energy and space research as partof an overall agreement between India and the Federal Republic of Germany, in the field of science and technology.

Karnataka to have a department of science & technology

The Karnataka Government is considering a proposal to set up a Department of Science and Technology. The department will not only collect and process data, but also be in charge of the implementation of science projects suggested by the Science and Technology Council. The council was doing good work and had prepared a number of projects. It had evolved an improved version of hand pumps and had a scheme for the manufacture of energy food for school children. The food was being manufactured at Mysore and a unit was proposed either in Chitradurga or Bellary.

New office-bearers for Science Academy

The National Academy of Sciences, at its golden jubilee session held recently at Allahabad, elected Prof. B. Ramachandra Rao, Vice Chairman, University Grants Commission, as its president for 1981.

Prof. M. K. Singhal, head of the department of mathematics, Meerut University and Prof. Krishnaji, professor of physics and national fellow of Allahabad University, were elected vice-presidents.

The other office bearers are: general secretaries: Prof. H. C. Khare, department of mathematics, Allahabad University and Mr. Maheswari Dayal, adviser, department of science and technology; Prof N. R. Dhar, director, Sheila Dhar Institute of Soil Science, Allahabad University, was elected foreign secretary of the academy.

The treasurer will be Prof. H. L. Nigam of the chemistry department of Allahabad University.

The outgoing president, Dr. Hari Narayan, Vice-Chancellor of the Banaras Hindu University, will be a member of the executive committee.

BHEL sets up biggest ultra-high voltage lab

India's biggest ultra-high voltage laboratory has been set up by the scientists of the Bharat Heavy Electricals, Bhopal. India is the only developing country to have such a sophisticated and modern testing laboratory which is among the five foremost laboratories of its kind in the world. Setting up of the laboratory marks a significant milestone in the country's drive towards a higher rating in power development.

CSIR fellowship stipends increased

The Council of Scientific and Industrial Research has announced an increase in the stipends given by it for different categories of research fellowships and associateships. The increase in the stipends and contingent grant of CSIR research fellows and research associates will take effect from November 1.

The monthly stipend of a junior research fellow has been enhanced from Rs 400 to Rs 600 per month. At the end of two years, his work will be assessed and if recommended, he will be designated as senior research fellow (SRF) with an enhanced stipend of Rs 700 p.m. The tenure of JRF will be for a period of two years only.

The eligibility criteria for senior research fellowship (SRF) will be at least two years post M.Sc. research experience with at least one pub'ished or accepted paper for those in science subjects, or first class M.E. or M.Tech. in engineering and technology, or first class M.B.B.S. with completed internship in medicine. The duration of SRF will be three years only. As soon as a SRF receiving a stipend of Rs 700 per month submits his thesis he would be eligible for an enhanced stipend at the rate of Rs 800 per month.

The tenure of a SRF in the disciplines of engineering and medicine will be four years. For the first two years, the fellows will receive a stipend of Rs 700 p.m. (as against Rs 500 at present) and thereafter, based on assessment of his work, the stipend will be enhanced to Rs 800 per month for the remaining tenure. During the tenure, if a SRF obtains Ph.D. or M.D./M.S., his stipend will be enhanced to Rs 900 p.m. for a further period of one year from the date of issue of university notification. and he will be designated Post-Doctoral Fellow (PDF). Thus, enhancement of stipend will be Rs 200 per mensem for JRF and Rs 200 to Rs 300 per month for SRF and Rs. 100 per month for PDF.

Scholars with Ph.D. degree, in future can apply for CSIR Research Associateships. The number of associates to be recruited each year has been raised to 100, from the present level of 25. In the case of research associates, the stipend has been revised to Rs 1100—1500 per month from the existing Rs 1000—1400 per month.

At present the CSIR as about 5,000 research fellows working in universities, IITs and other centres of higher learning, and R & D laboratories and various research organisations.

Personal

1. **Dr. Jagdish Narain has been re-appointed Vice-Chancellor of Roorkee University for a period of three years w.e.f. 11th October, 1980.**
2. **Mr J.D. Gupta, Secretary, Haryana Education Department, has taken over as the Vice- Chancellor of Maharshi Dayanand University, Rohtak, with effect from 28th October 1980.**
3. **Mr. B.N. Jha has been appointed Coordinator of the L.N. Mithila University.**
4. **Dr. P J. Deoras has been awarded the gold medal by the Zoological Society of India for his research on 'Rats in Maharashtra'.**
5. **Dr. A. P. Patra has been appointed Director of the Saha Institute of Nuclear Physics, Calcutta.**

Role of Teachers in Population Control

(*Continued from page 630*)

use in their day-to-day life. Thus the education programme can be effectively carried out by various institutions of adult education which are already in existence. The educators should not confine their experience, expertise, proficiency, training, skills and their new knowledge to the schools only but should strive to reach out to the society at large.

Properly planned population, education and well trained committed teachers are fundamental prerequisites for the effective and successful implementation of the family planning programmes in any country. Population education will bring about the required change in the attitudes, the knowledge and the behaviour of the youth of the country and thus help the programme succeed, achieving thus a significant reduction in the birth rates. □

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Advertisement No. 31/80

Applications are invited for the following posts of Research Engineers for work in the project entitled "Development of Glass Fibres for optical Communication", supported by the Ministry of Defence and to be carried out at the Advanced Centre for Materials Science of the Institute.

Research Engineer 'B' ;—one post.

Pay scale: Rs 1100-50-1600

Qualifications: Doctorate degree in Materials Science or related areas

OR

M. Tech. (or equivalent) degree with at least 5 years of practical experience in a public or private undertaking with a record of meaningful development/project activity. In exceptionally maritorious cases, the Selection Committee may relax the required number of years of experience.

Research Engineer 'A':—one post.

Pay scale: Rs 700-40-900-EB-40-1100-50-1300

Qualifications: M. Tech. degree

OR

B. Tech. (or equivalent) degree with atleast 3 years of practical experience in a Public or private undertaking with a reccord of personal accomplishments in developmental project activity. In exceptionally meritorious cases, the Selection Committee may relax the required number of years of experience.

Desirable: Candidates having experience in any of the areas of Applied Optics/Glass/Electronics Instrumentation will be preferred.

The posts are temporary and appointments will be made for a period of two years on a contract basis.

Besides pay, post carries allowances according to Institute rules which at present correspond to those admissible to Central Government employees stationed at Kanpur. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route. All applicants from Govt/Quasi-Govt. organizations, public undertakings should forward their applications through proper channel.

The applications should be made on the prescribed form obtainable free of charge from the Registrar of the Institute by sending a self addressed unstamped envelope of 25 cm x 10 cm size. Applications should be accompanied by a postal order of Rs 7.50 (Re 1.87 for SC/ST candidates) in the name of the Registrar, Indian Institute of Technology, Kanpur-208016 and should reach him on or before **November 28, 1980.**

BANARAS HINDU UNIVERSITY

Advertisement No. 23/1980-81

APPLICATIONS are invited for the undermentioned post. The benefit of Provident Fund/Pension, Dearness Allowances, House Rent Allowances and City Compensatory Allowances are admissible according to University rules. The retirement age of University Employees is 60 years. The appointment will be made on two years probation. Higher starting salary within the grade is admissible to specially qualified and experienced candidates.

Applications will be entertained on the prescribed form duly supported with a Bank Draft or Crossed Indian Postal Orders for Rs. 7.50 in favour of the Registrar, Banaras Hindu University towards the application fee. Application forms alongwith the leaflet of information will be supplied free of cost by the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221005 on receipt of Rs. 0.60 paise stamped self-addressed envelope of 23 cm x 10 cm size. Candidates called for interview for this post will be paid actual Railway fare by the Second Class plus reservation charges for sleeper, if paid, and/or actual Bus fare from the present residence both ways by the shortest route as per University rules. No other expenses will be paid.

Outstation candidates may send their bio-data along with attested copies of all the certificates and details on plain paper alongwith the application fee of Rs. 7.50 in Bank Draft/I.P.O. to avoid delay, in case they do not get the prescribed form in time.

Application for the post be sent along with attested copies of certificates in support of the qualifications and experience mentioned in the application and be addressed to the Registrar (Selection Committee Section), Banaras Hindu University, Varanasi-221 005, India.

Incomplete application in any respect will not be entertained for consideration.

Those who are in service should apply through proper channel. M.O. or Cheque will not be accepted towards the application fee.

Last date for receipt of application is November 20, 1980.

1. Reader in Vedant (One) (Faculty of Oriental Learning & Theology)
Grade: Rs. 1200-50-1300-60-1900.

Qualifications

Essential: Good academic record with a Doctorate Degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials. About five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Desirable: Working knowledge of other branches of Darshan.

SAURASHTRA UNIVERSITY

RAJKOT-360005

Applications in the prescribed forms are invited for the undermentioned posts. Application forms along with detailed requirements of qualifications and experience for these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360005, on sending a self-addressed envelope of the size 23×11 cms. with postage stamps worth Rs. 1.60.

Applications (seven copies) accompanied by Indian Postal Order for Rs. 10/- crossed in favour of the Registrar, Saurashtra University, Rajkot, should reach this Office on or before **29-12-1980.**

1. Department of Gujarati
Professor—1

2. Department of Economics
(a) Professor—1

Specialization in Business Management

(b) Reader—1

Specialization in Quantitative Economics/Mathematical Economics/Econometrics/Applied areas of Economics.

3. Department of Sociology
Professor—1

The incumbent is required to develop Rural Sociology in Saurashtra.

4. Department of History
(a) Reader—1
(b) Lecturer—1

Specialization in Modern period of Indian History and/or History of Modern Times.

5. Department of Commerce
Reader—1

Specialization in Quantitative Techniques or Applied Economics (Banking and Finance, Business Economics, etc.)

6. Department of Law
(a) Reader—1
(b) Lecturer—1

Pay Scales

1. Professor: Rs. 1500-60-1800-100 2000-125/2-2500
2. Reader: Rs. 1200-50-1300-60-1600-assessment-60-1900
3. Lecturer: Rs. 700-40-1100-50-1300-assessment-50-1600

The posts are permanent and the appointment shall be given on probation initially for one year which may be extended for a period not exceeding one year.

The initial appointment shall be with the minimum of the pay scale but in suitable cases higher initial pay may be considered. The allowances like

D.A., A.D.A., H.R.A. etc. and Provident Fund and retirement benefits will be admissible as per the University Rules from time to time.

One post is reserved for Scheduled Castes, Scheduled Tribes, Nomadic Tribes/Denotified Tribes and Social Educational Backward Class candidates subject to the availability of suitable candidates.

Age ordinarily not exceeding 55 years. The age, educational qualifications and the experience may be relaxed in suitable cases. The employment shall be subject to the conditions of service rules for the University employees as may be amended from time to time.

The candidates already in employment must submit their applications through their present employers. Those knowing Gujarati and/or Hindi will be preferred. The candidates will have to travel at their own cost if called for interview.

V.M. Desai
REGISTRAR

SHIVAJI UNIVERSITY
KOLHAPUR

Applications are invited for the following posts :

1. CHEMISTRY : One Lecturer (Organic) (Upto 6-5-1982 only),
2. ZOOLOGY : One Professor. One Lecturer.
3. PHYSICS : One Professor. One Lecturer.
4. MATHEMATICS : Three Lecturers : ONE in Applied Mathematics. Desirable : Must have specialized in one or more of the following fields: (i) Elasticity, (ii) Fluid Mechanics, (iii) Operations Research. ONE with the following as desirable, must have specialized in one or more of the following fields : (i) Analysis, (ii) Topology, (iii) Algebra, (iv) Numerical Analysis and Computer Science. ONE in Statistics (M. Sc. in Statistics), must haye specialized in one or more of the following fields : (i) Probability Theory, (ii) Statistical Inference, (iii) Industrial Statistics, (iv) Stochastic Processes.
5. GEOGRAPHY : One Reader.
6. ECONOMICS : One Reader.
7. HISTORY : One Reader.
8. POLITICS : One Professor.
9. SOCIOLOGY : One Professor. Two Lecturers.
10. RUSSIAN : One Lecturer.+
11. EDUCATION : One Lecturer.*

Pay Scale :

(i) Professor : Rs. 1500—60—1800—100—2000—125/2—2500.

(ii) Reader : Rs. 1200—50—1300—60—1900.

(iii) Lecturer : Rs. 700—40—1100—50—1600.

Qualifications

Professor : (A) A First or Second Class at Master's Degree and Doctorate in the subject of Statutory Indian or a Foreign University of repute; And Post Doctoral research published in Journals of high repute.

(B) Ten years' experience of teaching Post-Graduate classes and experience of guiding research at Doctoral level resulting in at least one student obtaining the Ph. D. Degree.

OR

(B) Ten years' experience of guiding research at Doctoral level resulting in at least one student obtaining the Ph.D. Degree,

(*Note*: Candidates applying for the posts of Professors should indicate in their applications whether they are prepared to accept the Readership in case they are not selected for Professor's Post.)

Reader : (A) A First or Second class at Master's Degree and a Doctorate in the subject of a statutory Indian or a Foreign University of repute, AND

(B) Five year's experience of teaching including three year's teaching experience at Post-Graduate level, and independent research work published in journals of repute.

Lecturer : (A) A Doctor's Degree or published work of an equally high standard; AND

(B) Consistently good academic record with first or higher second class (B+) at Master's Degree or equivalent Degree of a Foreign University.

Provided that if the Selection Committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (B) above.

Provided further that, if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a consistently good academic record (weightage being given to M. Phil. or equivalent degree or research work of quality) and having done research work for at least two years or having practical experience in a research Laboratory/Organisation, may be appointed on the condition that he will have to obtain a Doctor's Degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which he will not be able to earn future increments until he fulfils these requirements, and his services will be liable to be replaced by recruiting a person possessing the prescribed qualifications.

Candidates for being eligible for recruitment to the posts of Lecturers must have a First or high second class (B+) at the Master's level and for determining consistently good academic record, average of 55% at the two examinations prior to the Master's Degree examination i.e. (1) Concerned first Degree Examination (2) One Public Examination immediately preceding the Degree Examination i.e. Inter/Pre-Degree/PUC/or H.S.C. as applicable to the candidate or 50% marks in each of the two Examinations separately.

***Lecturer in Russian :** (A) M.A. in language concerned as essential qualification.

(B) A Diploma in foreign language from CIEFL or its equivalent as desirable.

***Lecturer in Education :** (A) B.A. and M.A. Degrees in I or II Class in Education, Philosophy Psychology and Sociology, OR (A) M.Ed. Degree in I or II Class, and

(B) Ph.D. Degree or experience of research, innovative work and experimentation and extension work in the fields of Education.

Candidates selected will have to do training in M.A. (Education), M.Ed. and M.Phil. guide research with interdisciplinary approach, organise extension work and community programmes and undertake innovative work.

Age Limit : Candidates applying for the posts of Professor should ordinarily be below the age of 50 years, those applying for the posts of Readers should ordinarily be below the age of 45 years, those applying for the posts of Lecturers should ordinarily be below the age of 35 years. However, this age limit may be relaxed in the cases of deserving candidates.

Other things being equal, preference will be given to candidates belonging to Scheduled Castes and Scheduled Tribes.

Prescribed application forms (seven copies) can be had from the University office. Desirous candidates are requested to send Indian Postal Order of Rs. 3.50 alongwith a self addressed envelope (Size 28 cm × 12 cm) with a postage worth Rs. 1.40 paise.

Seven copies of applications along with necessary enclosures attached to each copy of the application should reach the Registrar, Shivaji University, Vidyanagar, Kolhapur-416004, on or before **13th December, 1980**

Usha Ithape
REGISTRAR

It Pays
to
Advertise
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University
News

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Ashok Kumar. A study of fixed points of mappings in metric and 2-metric spaces. University of Delhi.

2. Joseph, Leelamma C. A biomechanical study of normal and artificial joints. Kanpur University.

3. Kapil, Dig Vijay Singh. Redundant systems in reliability models. Jiwaji University.

4. Krishnam Raju, Gottumukkala. Studies of secondary flow and heat transfer in rotating channels. Andhra University.

5. Prabhu, Ranjana Anant. Some topological and distributional aspects of finite Hankel-Laplace transformation and its applications. Shivaji University.

6. Vasantha, W.B. Simple modular lattices, super-modular lattices and some interesting equational classes of lattices. University of Madras.

Statistics

1. Jani, Prafulchandra Navalshanker. Estimation in the modified Power series: Distribution and its applications. Sardar Patel University.

Physics

1. Aggarwal, Madan Mohan. Multiparticle production at 200 and 400 GeV/c proton-emulsion interactions. Panjab University.

2. Arora, Jagan Dass. Study of diffusion length and effect of temperature and surface recombination velocity on the performance of silicon solar cells. University of Delhi.

3. Chandra Iyer, Ravi. Potential and scattering problems in quantum mechanics. University of Jabalpur.

4. Choubey, Jyoti. Potential phase shift and quantum mechanical equations with their applications. University of Jabalpur.

5. Gupta, Inder Jit. Lattice thermal conductivity of solid argon and neon at low temperatures. University of Delhi.

6. Maharana, Laxmidhar. Structure of hadrons. Utkal University.

7. Majumdar, Ramendranath. Studies on nuclear structure. University of Calcutta.

8. Makhdomi, Bashir Ahmad. Investigation of connections between electrical parameters of the atmosphere and meteorological parameters. University of Kashmir.

9. Mitra, Chandana. Studies on some ionic collision problems. University of Calcutta.

10. Nigam, Shiv Kumar. Geophysical and interplanetary effects on cosmic ray anisotropies. Awadhesh Pratap Singh University.

11. Ponnusamy, M.N. Some applications of probability methods in X-ray crystallography. University of Madras.

12. Raina, Mohan Krishen. Rain attenuation over Delhi with microwave radiometers at 10 and 11 GHz. University of Delhi.

13. Ramaswamy, S. Studies of electronic structure and defects in solids by positron annihilation. University of Madras.

14. Ramkumar, A.R. Infra-red and dipole moment studies of molecular interactions in liquid phase. University of Madras.

15. Subrahmanyam, Varigonda. Studies on some aspects of equatorial spread F. Andhra University.

16. Venkateswara Rao, Karumanchi. Studies on epitaxy in thin films Sardar Patel University.

17. Varkey, P.A. Study of ultrasonic velocity and absorption in some alloys. M.S. University of Baroda.

Chemistry

1. Agarwal, Mithlesh. Studies on Schiff's base derivatives of some of the three main group elements. University of Rajasthan.

2. Bajaj, Amritlal. Coordination chemistry involving macromolecular and other ligands and spherical cations including manganese. University of Indore.

3. Bhavsar, P.C. Development of non-cellulosic membrane for reverse osmosis. Saurashtra University.

4. Ghosh, Tapas Kumar. Studies on vinyl polymerization in presence of some performed polymers. University of Calcutta.

5. Jain, Surendra Kumar. Possible new biologically active fluorine containing heterocyclics. University of Rajasthan.

6. Jain, Vimal Kumar. Studies on glycerol production by fermentation using osmophilic yeast. Kanpur University.

7. Joshi, Ramesh Anna. Synthetic approaches towards dendrobine. Shivaji University.

8. Kannan, S. Studies in the chemistry of alicyclic rings Univeasity of Delhi.

9. Krishnan, U. Studies on mixed ligand complexes of copper (II). University of Madras.

10. Kulkarni, Shashikant Khanderao. Study of Some chalkones and indoles. Shivaji University.

11. Lahiri, Bibhas. Studies on bacterial antigens. University of Calcutta.

12. Mashru, Urvashi Amritlal. Liquid crystals: Study of the mesomorphic state. M.S. University of Baroda.

13. Mishra, Haraprasanna. Investigation on some aspects of metal complexes. Sambalpur University.

14. Mittal, Alka, Physico-chemical studies of the complexes formed by substituted 8-hydroxyquinolines with some metals. University of Indore.

15. Narula, Chaitanya Kumar. Derivatives of group IV elements with nitrogen ligands like hydroxamic acids and amidoximes. University of Rajasthan.

16. Patel, Gordhanbhai,Keshabhai. Studies on fatty acids and glyceride composition of milkfat under different dietary conditions. Sardar Patel University.

17. Patel, Prakashchandra Ambalal. Physico-Chemical properties of polymers: New acrylic polymers and postnylon polyamides. Sardar Patel University.

18. Pati, Alokkumar. Studies on some Indian vermiculites and chlorites. University of Calcutta.

19. Ramakrishna Swamy, B. Oxidation mechanism. Berhampur University.

20. Ray, Asiskumar. Studies on chemical bonding with particular reference to phosphate bonding. University of Calcutta.

21. Rikibdar, Muzaffar Ishaq. Kinetics of hydrolysis of some N-substituted hydroxamic acids. Shivaji University.

22. Sarkar, Chhanda. Studies on the utilization of bagasee for the production of single cell protein. Kanpur University.

23. Sharma, J.P. Chemical investigation of some Indian medicinal plants. University of Indore.

24. Sharma, Rajendra Kumar. Studies on Schiff's base derivatives of titanium (iv) and zirconium (iv). University of Rajasthan.

25. Sharma Vijay Kumar. Investigation on the effect of nitrogen in relation to phosphorus, potassium manganese and boron on yield quality and ionic balance of sugarbeet, Beta vulgaris University of Rajasthan.

26. Sivasankar, B. Schiff's base complexes of d-and-f-block metal ions. University of Madras.

27. Sobhana, K. Analytical application of solvent extraction and ion exchanges. University of Calicut.

28. Thampy, K.S. Metal complexes of thio-semicarbazones. Bhavnagar University.

29. Trivedi, H.M. Studies on ion exchange in concentrated solutions. Saurashtra University.

30. Vijai Kumar. Evaluation of various substituted phenols as stabilizers for polyolefins. Kanpur University.

31. Waraich, Trilochan Singh. Structural investigations on some transition metal dithiocarbamates. University of Delhi.

Earth Sciences

1. Barman, Ghumendra. Studies on stromatolites from the Aravalli supergroup around Udaipur, Rajasthan, India with special reference to their utility in geological mapping, biostratigraphy and phosphate deposition. Gauhati University.

2. Gopala Krishna, Gadde. Magnetic surveys over some chromite occurrence in Khammam and Krishna Districts of Andhra Pradesh. Andhra University.

3. Narayana Swamy. Addala. Geohydrology Visakhapatnam Basin. Andhra University.

4. Suryanarayana Raju, Alluri. General circulation and the atmospheric distribution in winter over India. Andhra University.

5. Swapna Devee. Geology of the pre-cambrian rocks of Kamrup District with special emphasis on the metabasic rocks. Gauhati University.

6. Vasantha Kumar, I.R. A study of the charnockites and associated rocks around Kanakapura, Bangalore District, Karnataka. Bangalore University.

Engineering and Technology

1. Kalanidhi, Adinarayana. Studies in transport phenomena: Heat transfer in fixed and fluidised beds. University of Madras.

2. Ramachandra, K. Stress analysis and optimization of profiles of Wildhaber-Novikov gears for air-craft gas turbines and industrial applications. Bangalore University.

3. Walia, Amarjit Singh. Interphase, mass transfer involving spherical fluid particles. Panjab University.

BIOLOGICAL SCIENCES

Anthropology

1. Choudhury, Bapukan. A cross-section study of growth of some somatometric characters of Rabha boys of Kamrup district, Assam. Gauhati University.

Biophysics

1. Bansal, Mohinder Pal. Studies on experimental leukemogenesis in mice. Panjab University.

Biochemistry

1. Bhattacharyya, Pramatharanjan. Studies on certain aspects of physiology of antibiotic resistant intestinal lactobacilli in relation to their survival in the intestine of the host. University of Calcutta.

2. Chakraborti, Indira. Action of cannabis on the reproductive system of rats. *D.Sc.* University of Calcutta.

3. Das, Manjusri. Studies on some biological membranes. University of Calcutta.

Microbiology

1. Majumdar, Gopa Harinendra. Studies on ripening and storage of mangoes. M.S. University of Baroda.

Botany

1. Bharal, Shashi Bala. Regeneration in tissue, cell and protoplast cultures of the legumes: Vigna indigofera and alhagi. University of Delhi.

2. Darshan Kaur. Histopathologic and histochemical studies in Brassica campestris L infected with Albugo candida (Pers. ex Hook). University of Delhi.

3. Garg, Meenakshi. Palynological studies on some woody perennials of Western Himalayas. University of Delhi.

4. Gopinathan Nair, P. Studies on the sparing effect of dose fractionation for oxic and anoxic components of radiation damage in Hordeum vulgare L. Jawaharlal Nehru University.

5. Kashikar, Sanjeev Govindrao. Comparative mutagenecity of physical and chemical mutagens in Petunia hybrida Hort. Nagpur University.

6. Kulkarni Dilip Keshav. Studies in fungal taxonomy, Pathophysiology and aeromycology. Shivaji University.

7. Manjula, B. Taxonomic studies on South Indian Agaricales. University of Madras.

8. Mukherjee, Uma. An ecological study on seed dynamics, seedling establishment and growth of Alysicarpus monilifer D.C. and Indigofera enneaphylla L. University of Gorakhpur.

9. Nanda, Rajinder. Assessment of morphological and physiological characters of wheat during vegetative phase. Punjab University

10. Narsa Reddy, R. Study of apomictic, and cytoplasmic, genetic male sterility systems in sorghum. Kakatiya University.

11. Rajasekaran, D.S. Conidium ontogeny in some dematiaceous hyphomycetes. University of Madras.

12. Rami Reddy, P. Kodanda. Structural and developmental studies on the pericarp of some Caesalpiniceae. Sardar Patel University.

13. Sarkar, Krishna Rani. Studies on the little leaf disease of brinjal, Solanum melongena L. in Eastern Uttar Pradesh. University of Gorakhpur.

14. Sawran Jit Singh. Studies on the nutrition of some members of Ustilaginales. Panjab University.

15. Sharan, Hari Mohan. Ecology of some lentic and lotic freshwater habitats around Sagar with special reference to production studies. University of Saugar.

16. Sharma, Krishna Kumar. Genetic analysis of plant height and other quantitative characters in rice, Oryza sativa L, University of Jabalpur.

17. Singh, S.P. Investigation on the role of distillery and domestic wastes on the productive potential of fresh waters of Gorakhpur. University of Gorakhpur.

18. Trivedi, Rakesh Kumar. Studies on primary production in shallow freshwaters around Jaipur with reference to the effects of pollution from domestic sewage. University of Rajasthan.

Zoology

1. Amar Shobha. Studies on the internal reproductive organs of Indian Curculionidae and their taxonomic significance. Panjab University.

2. Bhagat, Ramish Chander. Parasitoid complex of aphids of Kashmir with special reference to Aphididae (Hymenoptera). University of Kashmir.

3. Bhanu, Rishimangam Chidambaran Rajyalakshmi. Studies on the gastropod genus Thais Rodding with special reference to Thais (Lamarck). Andhra University.

4. Bhattacharyya, Sachchidananda. Biology and ecology of a sea anemone of intertidal mudflat of Sagar Island, Sundarbans India. University of Calcutta.

5. Chaturvedi, Subhash Chander. Ecological studies of Billowa and Jorasi forests of Gwalior District, Madhya Pradesh. Jiwaji University.

6. Gupta, Krishna Chander. Studies on the neuroendocrine and reproductive organs of insects. Jiwaji University.

7. Jamadar, Yusuf Ali. Study on the ciliate parasites of marine and estuarine molluscs. University of Calcutta.

8. Jayashree, R. Occurrence and function of prolactin in certain teleostean fishers of Karnataka. Bangalore University.

9. Khan, Munnavar Sultana Ahmad. Early development, development of foetal membranes and placentation in one species of migrochitoptera, Scotophimus heathi (Horsefield). Nagpur University.

10. Krishna Gopal. Studies on the chromosomes of some Indian mosquitoes (Diptera: Culicidae). Panjab University.

11. Lachhmi Narain. Cultivation, virulence and chemotherapeutic studies of Entamoeba histolytica. Panjab University.

12. Lenka, Manasranjan. Ecology of Australia antigen in Calcutta area. University of Calcutta.

13. Mankar, Anil Gulabrao. Cytology of the adenohypophysis in some Indian bats. Nagpur University.

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17. Senapati, Bikram Keshari. Aspects of eco-physiological studies on tropical earthworms: Distribution, population dynamics, production, energetics and their role in the decomposition process. Sambalpur University.

18. Singhotam, L. Ultrastructural studies on sporozoan parasites, Grebnickiella pixelllae Misra (Gregarinida, Eugregarinina) and Adelina sp. (Coccidia, Adeleidea) of the centipede, Scolopendra moristans Linn. University of Delhi.

19. Yerkuntwar, Sanjeewani Baliram. Studies on the morphology and control of the dog-tick, Rhipicephalus sanguineus Lotreille, 1908 (Acarina: Ixodidae). Nagpur University.

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1. Chandrasekaran, S. Preparation of treponema palli-

lum hemagglutination antigen (TPHA), it's standardisation nd evaluation. University of Madras.

2. Chattopadhyay, Tapankumar. Biochemical study on oetal and placental tissue of humans with special reference to human placental and fetal brain alkaline phosphatase. University of Calcutta.

3. Ghosh, Sanjay. Biochemical studies of Vibrio cholerae under normal and antimetabolite resistant conditions. University of Calcutta.

4. Kar, Paritosh Kumar. Studies concerning certain actions of scorpion venom. University of Calcutta.

5. Logamuthukrishnan, K. Continuous intracranial pressure monitoring in neurosurgery. University of Madras.

6. Prabhakar, Nanduri Ramchandra. Cardiovascular and respiratory changes during urinary bladder distension in dogs. M.S. University of Baroda.

7. Ravi, K. Location of pulmonary stretch receptors. University of Delhi.

8. Sam Murthy, M. Anti-fertility effect of diethyl carbamazine citrate in rodents. University of Madras.

9. Venkateswara Rao, Narayanam. Nitrogen metabolism in relation to age and nutritional status. M.S. University of Baroda.

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1. Behl, Rishi Kumar. Studies on genetic divergence, heterosis and gene action in hexaploid triticale. Haryana Agricultural University.

2. Chandrappa, H.M. Mutagenesis in sunflower, Helianthus annus L. University of Agricultural Sciences, Bangalore.

3. Chandrashekara Reddy, S. Agronomic investigations on irrigated groundnut, Arachis hypogaea L under black clay soils. University of Agricultural Sciences, Bangalore.

4. Das, Manamohan. Structural analysis of present agriculture in Assam. Gauhati University.

5. Iyengar, G.A.S. D.N.A. hybridization and evolutionary relationship among some species of the genus Oryza. University of Calcutta.

6. Kudasomannavar B.T. Agronomic investigations on irrigated rabi sorghum, Sorghum bicolor (L) Moench. University of Agricultural Sciences, Bangalore.

7. Mahajan, Jivaram. Tracer studies on phosphorus utilization by crops as influenced by soil fertility status and levels in medium black soil of Jabalpur. Jawaharlal Nehru University.

8. Mandal, Banbihari. Surface behaviour of naturally occuring humus materials. University of Calcutta.

9. Manjunatha, A. Genetics of seed yield, oil content and other quantitative characters in sunflower, Helianthus annus L. University of Agricultural Sciences, Bangalore.

10. Mohammad Yunus. Studies on the nature and extent of variability under different mating systems in wheat, Triticum aestivum L. Haryana Agricultural University.

11. Mukhopadhyay, Samir Kumar. Physico-chemical properties, mineralogy and genesis of some selected lateritic and red soils of West Bengal. University of Calcutta.

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13. Seth, Khushi Ram. Studies on Lilliputia rufula (Berk & Br) Hughes and its control. Himachal Pradesh Krishi Vishwa Vidyalaya.

14. Shukla, Diwakar. Studies on the retention of ascorbic acid in aonla, Emblica officinalis Gaertn during its preservation. Kanpur University.

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HIMACHAL PRADESH UNIVERSITY

Recruitment Branch Simla-171005.

Advertisement No. 9/80

Applications on a plain paper (duly typed in the proforma given below) under registered cover, alongwith a crossed Indian Postal Order of Rs. 10/- (Rs. 5/- for S.C./S.T.) payable to the Finance Officer, H.P. University, Simla-5 are invited for the post of REGISTRAR so as to reach the undersigned on or before **5th December 1980**.

Essential Qualifications

Master's degree in any faculty with 5 years' experience as a principal in a college affiliated to or maintained by the University.

OR

Teaching experience as a Reader in a University preferably, with 5 years' administrative experience.

OR

Master's degree in any faculty with 5 years' experience as a Deputy Registrar or in an equivalent post in a University or Board of School Education.

OR

Master's degree in any faculty with 5 years' administrative experience in the Central or State Government Administrative Service (on deputation, if necessary).

OR

Master's degree of a recognised University or its equivalent qualification with at least 10 years' administrative experience in a University or an educational Institution.

Pay Scale : Rs. 1500-2500

Candidates already in service should send their applications through proper channel. An advance copy, may, however, be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied formally.

The University also reserves the right to fill up or not to fill up the post or to call only selected candidates for interview.

Candidates are required to give the following particulars:

1. Name of the Post
2. Name of the applicant (IN BLOCK LETTERS)
3. Date of birth
4. Address for Correspondence
5. Province of Domicile

6. Academic qualifications: giving division and percentage of marks in each examination: from high school onwards (Attach attested copies):

7. Teaching experience with detail of post held, name of the institution, period with date and last pay drawn:

8. Research work and experience of research guidance, Number of students guided in each programme.

9. Papers/Books/Articles published, if any (list to be enclosed)

10. Minimum Salary acceptable

11. IPO No date

(MONEY ORDERS OR CHEQUES ARE NOT ACCEPTABLE)

12. Any other information worth mentioning, not covered above

Signature of the candidate with date

NOTE : i) Applications not inconformity with the above requirements and applications received after the due date will not be entertained, and no correspondence will be entertained in this regard.

ii) Persons who have already applied for the above mentioned post in response to our earlier advertisement No. 1/80, dated 17th Jan., 1980 need not to apply again. However, they may send additional informations, if any.

Officer-in-Charge (Rectt)

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Advertisement No. 32/80

Applications are invited for the posts of Assistant Professor/Lecturer in Economics, Psychology and English in the Department of Humanities & Social Sciences in the following scales :

Assistant Professor : Rs. 1200-50-1300-60-1900

Lecturer : Rs. 700-40-1100-50-1600

Number of positions available : Three (Likely to be Four)

Required Areas of Specialisation :

Economics : Economic Theory (Macro and Micro), Industrial Economics and Development Economics preferably with specialisation in Resources Development.

Psychology : Organisational Psychology, Statistical Methods, Experimental Design and personality.

English (One Lecturer) : T. G. Grammar and Historical Linguistics with background in Applied Linguistics and experience in devising and recording courses in English Language.

QUALIFICATIONS

Asstt. Professor : Doctorate degree with good academic record and at least *three years* of professional experience outside the work for degrees. The candidates must have potential for independence in teaching and independent research work as demonstrated by adequate number of publications of good quality in journals of repute outside the candidate's own thesis, or equivalent development work done.

Lecturer : Doctorate degree with a good academic record and adequate research experience resulting in research papers of good quality.

Qualifications for candidates in English :

M. A. in English and Ph. D. in Linguistics.

The Indian Institute of Technology has well equipped laboratories and central facilities. The Computer Centre has IBM 18, PDP-1 Systems with interactive graphic terminals, TDC-316, DEC 10 and a group of experienced programmers. The Institute has well stocked library with more than 2,17,000 volumes and 1,800 periodicals.

The Campus facilities include a Primary and Higher Secondary School, a Health Centre and Shopping Centre.

The posts are permanent and carry retirement benefits in the shape of CPF Scheme or CPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme, as may be opted according to rules. The age of retirement is 60 years. During the first year, the appointment will be on probation. Besides pay, posts carry allowances according to the Institute rules, which at present correspond to those admissible to the Central Government employees stationed at Kanpur. Higher initial pay is admissible to exceptionally qualified and deserving candidates. Candidates called for interview will be paid second class railway fare from the place of duty to Kanpur and back by the shortest route.

In the category of Lecturer one post will be reserved for SC/ST candidate. In the event of non-availability of suitable SC/ST candidates, the reserved post would be treated as dereserved.

Applications from within India must be made on prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed unstamped envelope of 25 cm. x 10 cm. size. Application should be accompanied by a postal order for Rs. 7.50 (Re. 1.87 for SC/ST candidate).

Applicants who are employed in a Government/Semi-Government organisation or Institutions should send their applications through proper channel, else they will be required to produce a 'No Objection' certificate from their employers at the time of interview.

Applicants from abroad may apply on plain paper enclosing a complete bio data and names of three referees from whom reference letters may be obtained.

Applications should reach the Registrar, Indian Institute of Technology, Kanpur, IIT Post Office, Kanpur-208016, U.P. (India) **on or before December 15, 1980**.

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University News

ORTNIGHTLY CHRONICLE OF HIGHER EDUCATION & RESEARCH DECEMBER 1, 1980

Prime Minister, Smt Indira Gandhi, presenting the Sir C.V. Raman Award for research in Physical Sciences to Prof. Krishnaji, National Professor of Physics and former Pro-Vice-Chancellor of Allahabad University, in New Delhi.

CENTRE FOR CONTINUING/ ADULT EDUCATION & COMMUNITY SERVICES

M.S. UNIVERSITY, BARODA

Notification No. 1

Applications are invited for three temporary posts of Lecturers in Continuing/Adult Education in the prescribed form which will be available upto 30th November, 1980., along with the details of qualifications etc. from the undersigned on payment of Rs. 2.00 (Re. 0.50 for members of Scheduled Caste/Tribe) by crossed Indian Postal Order payable to the Director, Centre for Continuing/Adult Education, along with a self addressed envelope of 30 cms x 12 cms. **Scale** : Rs. 700-40-1100-50-1300-Assess-1600 plus DA, ADA, HRA, CLA as per rules. The application form duly completed be sent to the Director, Centre for Continuing/Adult Education and Community Services, M.S. University Office compound, Baroda, 390 002 so as to reach him on or before **15th December, 1980.** The candidates, if called for interview, will have to appear at their own expense.

M. Chakravorty
DIRECTOR

DIBRUGARH UNIVERSITY

DIBRUGARH: ASSAM
Advertisement No. 9/80.

Applications are invited from Indian Citizens for the following posts :—

(1) Syestem Engineer	—	One
(2) Instrument Operator	—	One
(3) Store Assistant	—	One

Scale of Pay

(1) System Engineer	Rs. 1100-50-1350-EB-50-1600
(2) Instrument Operator	Rs.700-40-1100 EB-50-1300/-
(3) Store Assistant	Rs. 285-9-330-EB -10 -420 -11-475/- plus all other allowances as admissible under University rules

Qualifications : Essential

(1) **System Engineer**: Master's level Degree in Computer Science with specialisation in Software Engineering with some experiences, Or Graduate in Electrical/Electronic Engineering, Or Master Degree in Physics, Statistics Or Mathematics with extensive training in Computer Science.

(2) **Instrument Operator** : (i) Second Class Master Degree in Physics or Chemistry (ii) At least two years experience in handling and maintenance of sophisticated instrument like I.R. UV Spectrophotometers UV and IR Spectra.

(3) **Job requirement** : To maintain, handle and interpret UV and IR Spectra.

(4) **Store Assistant** : Pre-Degree Science with experience in handling and storing chemicals Or Matriculate with 2 years experience in maintaining stores for chemicals. Preference will be given to persons with good hand writing.

Seven copies of applications in plain papers giving full bio-data including (1) Name in full (Block letters), (2) Father's name, (3) Date of birth, (4) (a) Permanent address (b) Present address (5) Present occupation, if any, and name of employer, (6) Present salary drawn, if any, (7) Detailed academic career with marksheets from Matriculation onwards, (8) Details of experience, (9) Name and address of two referees not related to the candidate together with an application fee of Rs. 5/- (Rupees five) Rs. 2.50 (Rupees two & paise fifty) in case of S.T./S.C. candidates by INDIAN POSTAL ORDERS drawn in favour of the Registrar, Dibrugarh University in a sealed cover superscribed "Application for the post applied for, and Advertisement No. should be addressed to Dr. D.H. Goswami, Registrar, Dibrugarh University, Dibrugarh to reach him not later than **10th December, 1980.**

The number of this advertisement and the name of the post applied for must be referred to in the application. Persons already in employment should apply through proper channel with a 'No Objection Certificate' from the employer.

Candidates will be required to appear at an interview if and when called for, but no T.A./D.A. will be paid for the purpose.

D.H. Goswami
REGISTRAR

UNIVERSITY OF KERALA

No. AdDI (1) 2952/80
Notification

Applications in the prescribed form are invited from qualified candidates for selection and appointment to the post of Director, University Oriental Research Institute and Manuscripts Library.

Age

Not more than 50 years—relaxable in the case of those in the service of this University.

Qualification

(i) A First Class Master's Degree or a Second Class Master's Degree in Sanskrit or Malayalam with not less than 50% marks of an Indian University or an equivalent qualification of a foreign University.

(ii) Either a research degree of a Doctorate standard or published work of a high standard

(iii) About 10 years' experience of teaching in a University or College with experience in research in manuscripts.

OR

Ten years' experience of editing and research in manuscripts work.

Appointment will be made in accordance with Chapter II Section 6 Sub Section 2 of the Kerala University Act of 1974 and the rules and statutes framed thereunder.

Further details and the application form can be had from the Deputy Registrar (Administration), University of Kerala, Trivandrum on production of a challan receipt for Rs. 2/- paid to the credit of the Kerala University and at any branch of the State Bank of Travancore or on payment of the amount by crossed postal order made payable to the Finance Officer, University of Kerala, Trivandrum.

The last date for receipt of the filled up application forms in the University Office is **12th December, 1980.**

C.K. Devassey
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

BOMBAY-76
P.O. I.I.T., Powai, Bombay-400 076
Advertisement No. A-13/80

Applications are invited for the post of Assistant Professor in Environmental Science & Engineering Group of this Institute. Applicants should give an account of their academic and professional records and a list of research publications.

Assistant Professor in Environmental Engineering

Scale of Pay
Rs. 1200-50-1300-60-1900.

Qualifications & Experience

Applicant should have consistently excellent academic record with Doctorate degree in Environmental Engineering with Bachelor's degree in Civil Engineering from a recognised University/Institute. Minimum 5 years' experience in teaching/research/industry. Experience of carrying out independent research and of guiding research desirable.

The post is permanent and carry allowances such as D.A., C.C.A., H.R.A. as per rules of the Institute which at present correspond to those admissible to Central Government employees stationed at Bombay. Applications should be made on the prescribed form obtainable free of charge from the Registrar of the Institute by sending a self-addressed envelope of 25cm x 10 cm size. Indian candidates abroad may apply on plain paper in duplicate. Candidates employed in Government/Semi-Government Organisations or Education Institutes should apply through proper channel. Completed application should reach the Registrar, I.I.T., P.O. I.I.T., Powai, Bombay-400 076 by **15 December 1980.**

UNIVERSITY NEWS

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Opinions expressed in the articles and reviews are individuals and do not necessarily reflect the policies of the Association

Editor : ANJNI KUMAR

Rationale of Medical Research

T.M. Kumaraswamy

Traditionally, the universities are expected to fulfil a triple role. First, they must be living repositories of knowledge gathered during the past, staffed by experts who have mastered their knowledge. Secondly, they must be teaching institutions where knowledge is passed on to the younger generation in such a manner that continued learning, as a way of life, is encouraged. Thirdly, the universtities have been factories for new knowledge through research. The important question now is whether this third component is really necessary or whether, especially in medicine, the universities should do away with research, leaving this to the research institutes, thereby freeing more time for teaching.

The main point is that the universities can only fulfil the first two traditional and vital roles if staffed by people of excellence. This leads to the strongest reason for the need for continuing research in universities.

Teaching and research are inextricably intertwined. Research acts as a spur to the updating of teaching. The pure teacher may well revamp his lectures extensively for the first few years, but there is a great danger of getting into a rut if the intellectual atmosphere surrounding him is not pervaded with the ferment of change and if he is not sufficiently stimulated by research going on around him.

Another reason for maintaining research within universities relates to postgraduate education which would be inconceivable if deprived of a research base. It is but proper that every postgraduate is required to submit a thesis on a relevant subject confined to the speciality. Otherwise, the standard of postgraduate degree courses would be reduced to that of the postgraduate diploma courses. In fact the authorities should realise the importance of research in relation to the maintenance of a high standard of teaching and the development of the right attitude of mind in the student. Postgraduate medical education should aim at achieving such an objective. It is therefore imperative that students for postgraduate study should be selected only on merit and young talented medical graduates should be identified and given training for a career in research which is an important step in promoting medical research in the country.

It is important that good relations exist between research institutes and the university. Where these are present, the research institute can enhance the intellectual life of the university, and an involvement with the university can sharpen the work of the institute. Yet another reason justifying research in universities is that if all the research were left to

(Continued on page 654)

Undergraduate Academic Assessment at IIT Delhi

R.N. Nagpal

Poor reliability of examination procedures is a topic that has caught attention of educationists in India as well as in other countries, in the past couple of decades. A need has been felt to clearly define the objectives of examination procedures and to develop reliable methods of evaluating students' academic performance. Management of Examinations is the theme of a recent publication of the Association of Indian Universities and an effort has been made to confront some practical problems relating to the examination procedure followed at the various Indian Universities. The early seventies witnessed anxious concern of educationists in this regard. This is evident from the number of articles and research papers on different aspects of the then prevalent examination system. During the years 1970-75, over 400 technical papers have been reported in professional journals and seminar reports. Over 150 articles and research papers were published in 1971 alone, the year in which a Seminar on Examinations in Higher Education was conducted in New Delhi. It was generally felt that the traditional examination system had become outmoded and tended to be an exercise in futility. A new awareness to "examine the examinations" was born which in turn led to a consideration of several proposals of examination reform. It was felt that the semester system had advantage over the annual examinations and that evaluation in terms of grades was better than in terms of numerical marks. It was also felt necessary to have a gradual change from external to internal assessment and from terminal examinations to continuous assessment of students' academic performance. During the seventies, the University Grants Commission initiated examination reforms and many universities have adopted semester system and evaluation by grades, and have introduced internal assessment to external standards. Some leading professional institutions have also adopted Unit or Credit system of assessment.

The Indian Institute of Technology, Delhi, one of the five Institutes of National Importance in the field of engineering education, brought about its examination reform in the early seventies both at the postgraduate and the undergraduate levels, by changing to Credit system of evaluation on a semesterwise basis. Over the years, several innovations have been introduced in the examination and grading system and we are still in the process of critically assessing the new procedures, modifying and improving these. The academic assessment at the undergraduate level, viz. B. Tech., has three salient features. Firstly, the assessment is made in terms of credits which provides a distinct advantage to the students to academically develop at rates individually suited to each student. It is also characterised by the absence of a pass or fail on an annual basis as in the old scheme of examination. Secondly, the evaluation is made in terms of grades which are based on numerical marks as the raw data. The grading is relative rather than based on an absolute criterion. Thirdly, the assessment is completely internal. These reforms have brought about an almost complete change in the academic assessment system and the accompanying administrative procedures. Before describing these, some explanations of these salient features is called for.

Credit system

In the Credit system, a letter, grade is awarded in each course for which a student has registered. The quality of a student's performance is determined by his achievement in the minor and major tests, tutorial and sessional work, and other practical assignments. Normally, there are two minor tests that are scheduled during the semester and a major test is held at the end of the semester. Each course in the Credit system has a certain number of credits associated with it, which describes its weightage. The Credits of a course are linked with its L-T-P (Lecture-Tutorial-Practical) structure and contact hours. One Credit is assigned for each lecture or tutorial contact hour per week per semester. In the practical work, one Credit is assigned for a minimum of two hours per week per semester. The range of Credits for different courses varies from 3 to 6 depending upon their L-T-P structure.

The Credit load that each student takes in any semester is within a prescribed range. The maximum number of credits a student can take is 32, the lower limit is 18. The modal load is 24. Exceptions to the above range are permitted only after a thorough consideration of the merits of each case. Reduced load is advised and granted to students whose performance is at the marginal level. This is intended to enable them in developing at a pace suited to their academic potential. It is expected of students to earn 220 Valid Credits over a period of ten semesters. They must also have registered for a total of 240 Credits during this period. In addition to these, the students are required to complete certain prescribed number of credits in the areas of Languages and Social Sciences, Basic Sciences, Engineering Arts, Engineering Sciences and Departmental courses.

Grading system

The grading of performance is done on a 5-point scale: A, B, C, D & U. Each grade has a qualita-

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*Assistant Registrar, IIT, New Delhi.

tive and a quantitative connotation. These are given below:

Grade	Grade Points	Description of Performance
A	10	Excellent
B	8	Good
C	6	Satisfactory
D	4	Marginal
U	2	Unsatisfactory

The academic performance of each student in a particular semester is computed as the weighted average of the grade points awarded to him in the courses for which he is registered. This is termed as Semester Grade Point Average (SGPA) and is computed by multiplying Credit Unit of each course with the Grade Point obtained in each course, summing up the multiplication products and dividing it with the sum of Credit Units of all courses. A record is also kept of the Valid Credits thus earned as well as the total credits. The latter count also includes the Credits of such courses in which the student has Audit registration. An Audit course is defined as a course taken by a student without any credits, over and above the courses which count for his degree requirements. Auditing of a course requires regular attendance to the satisfaction of the instructor. The academic progress of each student over the duration of his study is maintained in terms of Cumulative Grade Point Average (CGPA). It is the weighted average of the grade points awarded to a student in all the semesters he has been in residence at the Institute.

The distribution of latter grades to a group or class of students is made in accordance with policy guidelines provided to the faculty members. It is expected from the Course Coordinators to ensure reasonable distribution and discrimination in marks awarded for individual groups by the teachers. Normally he sets norms for this purpose so that indiscriminate award of high or low marks for all students of a group is avoided. In courses involving more than one instructor, the marks are generally normalised so that the pooling of common test marks and non-common test marks is on an objective and rational basis. A distribution of marks is then prepared with the range of marks on the X-axis and number of students on the Y-axis. The letter grades are determined on the median criterion. Slightly above the median is the C-B dividing point. At about 1.25-1.30 times the median point is the B-A division. At about 2/3rd of the median point is the D-C division. Below half of the median point is U. These are guidelines for relative grading and wherever necessary, empirical data relating to the merit level of students of all disciplines is provided to the Course Coordinators to form an idea of the absolute merit level. The grades are finalised in consultation with the Dean of Under Graduate Studies or Head of the Department concerned depending upon whether a course is for the entire cohort or for a class group of a particular discipline.

The final results are announced in terms of a Graduating Point Average (GPA) and Class. The GPA is based on the best 220 Valid credits earned by a student. The system of categorising the GPA ranges into Class categories is as under :

Graduating Point Average	Class
8.50 & above	First with distinction
6.75-8.49	First
5.00-6.74	Second
4.00-4.99	Pass

Internal assessment

The third distinct feature of academic assessment at the Indian Institute of Technology, Delhi, is internal and continuation evaluation. It is internal in the sense that the examinations are designed and evaluated by examiners who teach the course. No experts from outside the institute are involved in the evaluation process. The Institute had some component of external assessment in the old scheme of examination such that the external examiner checked and verified the evaluation process. However, under the present system there are in-built checks by the academic heads and the Dean of Undergraduate Studies. Thus, the assessment system is fully internal and the processes of teaching and evaluation are integrated. In fact these two processes are continuous. The first minor test is generally scheduled within 4-6 weeks from the commencement of the semester and the second minor is held after another 4-6 weeks. These are interspersed with announced and surprise quizzes, class assignments, tutorial work etc. The major test is held towards the semester end. The grading procedure and the relative weightage to the minor and major tests, assignments, laboratory work, quizzes etc. is decided by the Course Coordinators of each course right at the beginning of the teaching process and is announced to the students. An approximate suggested distribution is 30-40% for minor tests, 30-40% for major test and 20-40% for quizzes etc. This sort of continuous evaluation enables the student to be assessed for his learning without a mounted stress at any particular time. It also helps the faculty to assess students more objectively.

Supporting administrative procedures

The objectives of credit system, evaluation in terms of grades and continuous internal assessment are attained by the help of some structured administrative procedures. Some of the important procedures are explained below :

Registration

The academic record of a student is maintained in terms of the courses for which he registers in any semester and the grades he obtains in these courses. Registration for courses is done at the beginning of each semester. The date, time and venue of registration is announced in advance. Registration is a very important procedural part of the credit system and it is absolutely necessary for all students to register at the proper time. Non-conformity in this regard can have disastrous consequences in proper maintenance of records. At the time of registration, the students are provided advice on the available courses by the Course Advisors. This is intended to facilitate the student in deciding the courses which he would take. The Course Advisor is given logistic support by the Academic Office by way of ready reference to uptodate performance of the student and the tentative choices that the student may have made. The registration data are processed in two streams. Firstly, a Registration sheet is prepared in respect of each student and its copy furnished to the student concerned. Secondly, roll lists for each course are prepared by a process of cross-tabulation. Normally, the registrations are done immediately before the commencement of each semester. The roll lists for each course have, therefore, to be worked out soon after the registration is completed. This necessitates the use of computer facility.

Scheduling of courses

Another essential procedure of this sort of assessment system is timely scheduling of courses for each semester. There are no fixed set of courses offered for each semester, as is the practice in most educational institutions. Considerable flexibility exists in the scheduling so that the students can exercise a choice. This involves obtaining students' choices for courses from a tentative schedule prior to registration and processing the information in consultation with the teaching departments. The Schedule indicates all courses that are to be taught in the forthcoming semester. These are arranged in seven different slots. Each slot has a different pattern of Lecture-Tutorial-Practical hours. The maximum possible contact hours per week that a student can have is 35 (7 hours a day, 5 days a week). Each student can make optimal use of his time by taking any of the courses in a particular slot at any level without a clash in his time table. The student can exercise his choice from the courses scheduled in each slot. This system of arranging courses provides the desired flexibility. The slot system also facilitates effective time-tabling.

Academic records

Since each student has his own rate of academic progress, it is necessary to maintain academic records on a unitary basis. A master grade card has been devised in which a place is allocated for posting performance of each student for all the ten semesters and for summer courses. This is facilitated by the use of computer for grade card output in a specified format each semester. This method of keeping records has been found to be very useful and appears to be an integral part of procedures for operating the credit system. It facilitates monitoring the progress of each student.

Semester schedule

The various administrative procedures are geared to a set Semester schedule which is prepared well in advance and notified to students and teachers. There are two Semesters in an academic year commencing in July and December. The programme of each Semester indicates dates of registration, commencement of classes, deadlines of addition/deletion/withdrawal of courses, mid-semester break and examination period. On the basis of these, the Academic Office has a Calender of activities that must be undertaken at different weeks of each semester.

There is also a provision for continuation of academic activity during the winter and summer vacations. Language courses are normally scheduled during the winter to enable students in making up their deficiency in English. Summer courses are run to enable students in making up their deficiencies in regular course work. These are generally of 8-9 weeks duration as compared with the regular semester of 14 weeks. To compensate for the short duration, the instructional process during the summer/winter course-work is kept at an accelerated pace and the credit registration is at most equal to one half the level of the normal semester load.

Decentralised examinations

In this system, the conduct of minor and major tests is decentralised. The teachers set the question papers, administer these, supervise examinations and evaluate performance of the group of students registered in the course concerned. The Course Coordinators are requested to play a very significant role. The Examination Section is expected to provide multifarious logistic support in this process. The expectations from the Academic and Examination Office in this system are altogether different. The emphasis is on keeping records on a unitary system and on functioning in accordance with a streamlined set of deadlines for initiating action on various aspects. This has also necessitated training of office staff in the use of computer facilities, cardex system of keeping records and use of other mechanical aids in academic office administration.

A critical evaluation of the credit system on the basis of our experience is perhaps necessary to conclude the description given above. The first cohort of graduating students under it passed out in 1979. Another batch of students have completed the prescribed minimum academic requirements at the end of the I semester of the section 1979-80. It has been observed that this system provides adequate opportunities to students to develop at their own optimal pace. This flexibility permits a really devoted student to complete his studies in less than the prescribed period of five years and on the other hand, it permits others to complete the 5-year course in as much as 7-years. One student has recently availed of this facility by calling it over at the end of 9th semester. It has been observed that this system of academic assessment makes greater demands on the teachers as well as on efficient office functioning. One of the necessary pre-requisite requirements of this set up is a continuous and meaningful dialogue between the students and teachers.

The student-teacher interaction is promoted at the Institute through the various schemes approved by the Senate. Under these, different forums are provided for students to interact with teachers.

(*Continued on page 654*)

Open Book Examinations

K.R. Ramachandran Nair*

OPEN BOOK EXAMINATIONS are being tried in some of the autonomous colleges at present. In 1970 the university of Jodhpur introduced open book examinations and gave it up later. The seminar on examination reforms held under the auspices of the Association of Indian universities in 1971 recommended open book examinations as a partial remedy for the ills of the traditional system. A similar seminar held in Jammu in 1974 also welcomed open book examinations theoretically though it warned that 'it may be rather immature and unsound to conceive of substituting closed book examination with open book examinations'.

In traditional examinations a number of questions are set and the examinee is asked to answer all or some of them within a specified duration. The examinee organises the answers using his own vocabulary at best or adopting the borrowed style of the bazaar notes at the worst. Answers come out of strenuous recalling and not out of cogent thinking or reasoning. Such examinations do not test the examinee's skill in perceptive organisation of ideas or his capacity for integration and synthesis of knowledge and information. It is merely an attempt to reproduce facts by rote and not an effort to assimilate concepts. Setting question papers become subjective and often a cavalier attempt at pedantic exhibition of the examiner's pet prejudices. The answering of it becomes an exercise in recall and parrot like reproduction of what cheap bazaar notes have passed off as scholarly expositions. In such examinations effective testing or supervision is not possible. With the growing disregard for authority even in the examination hall malpractices are rampant.

However, open book examinations should not be treated as a panacea for the ills inherent in traditional type of examinations. It is not an alibi for lax conduct of traditional type of examinations or a clever device to outwit the copying student. In fact only those who can conduct the traditional type of examinations successfully can make meaningful experiments with the open book examinations. It is not for the cowards and the incompetent.

Even in the traditional examinations open book system is partially employed as in permitting examinees to use logarithmic tables, square root tables, biological handbooks, geographical maps and charts etc. In the open book examination free access to books, documents and other materials is permitted and standardised so as to enable the examinee to make use of them discriminatingly in the task of answering questions. The examinee does not merely copy from the materials and books allowed but consults them to discover the relevant points to handle the problem involved in the question before him. He should have acquired necessary acquaintance with an insight into the content of the books earlier to elicit the most appropriate response to the questions he has to answer. It is an exercise in drawing out and analysing opinions, forming judgements and inferences and organising the jumbled strands of knowledge into a well-knit answer. Emphasis on memory is replaced by emphasis on the examinee's capacity to judge, organise and draw the answers from the supplied sources. However, a well trained memory is useful in locating the correct responses and supplying the missing links in them so as to produce a good answer.

The advantages of open book examination are several :

- (i) Tests can be set in all traditional forms of questions like essays, paragraphs and objective type.
- (ii) The examinee is free from pre-examination tension which normally retards the efficiency of his response to questions.
- (iii) Copying and other common malpractices would become unnecessary.
- (iv) Bazaar notes become irrelevant. As a consequence the racket in guide writing and publishing would become unprofitable.

It is feared that if open book examination is introduced, study efforts on the part of the students may be reduced, the response to questions would become stereotyped and monotonous and the enlivening variety in answers which we find to-day may vanish. Such a possibility is remote because in a well-organised open book examination the emphasis is shifted from memorising to the reviewing of the material mastered and as such more well directed and varied efforts become necessary to meet the examination challenge.

The most important factor that contributes to the stability of the open book examination system is the question paper. Setting a question paper in open book examination is a specialised task. Questions should be carefully and precisely worded so as to provoke clear responses from the examinees. They should be so designed as to stimulate the examinee's capacity to understand, organise, apply and exercise his knowledge rather than recognise the relevant answers in the text books and copy them. To increase the reliability and validity of the test, no choice should be allowed or at least it should be reduced to the minimum. Another task of the question setter is to modulate the question structure so as to wean away the examinees from the easy habit of merely recognising the relevant answers. The purpose is to encourage them to probe into the source material for relevant responses. Valuation of the answer scripts will have to be done more scientifically than at present. Instead of giving an overall evaluation as at present open book examination answer scripts should be evaluated by specially trained examiners under several score-heads like the knowledge of the

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subject, application, expression, sense of choice and organisation, inference etc. and a cumulative score index in terms of marks or grades may be given at the end.

Before introducing the open book examinaion it would be desirable to undertake a study of its feasibility in the Indian situation. The following aspects should be studied carefully :

1. Variations necessary in the application of the system in each discipline and subject.
2. Whether it should be a substituted for the traditional type of examination or a supplement to it.
3. The modality of fixing the pattern (essay, objective type etc.) depending on the nature and scope of each subject.
4. The method of drawing up a list of reference books in each subject and the code governing the supply of books and other materials at each examination in each subject to each examinee.
5. The possibility of introducing multiplicity of question papers in the same subject at the same examination so that each group of examinees would answer a different question paper.
6. Standardisation of evaluation among various examiners.

In a well organised open book examination the examinees are expected to exhibit a high order of intellectual skill and sense of organisation of ideas. So the system may be tried in the beginning at the postgraduate level only where the number of examinees involved would be limited and of a higher intellectual standard.

Open book examinations should not degenerate into a legally permitted copying system. The validity of the open book examination can be ensured only if the task of question setting and evaluation are left to specially trained examiners. Until every university has acquired the necessary infrastructure in terms of trained paper setters and evaluators and enlarged library facilities to meet the needs of individual examinees, open book examination should not be tried. Autonomous colleges which have introduced the system may be persuaded to review its working every year in the light of the rigorous norms to be observed. □

Rationale of Medical Research

(*Continued from page 649*)

institutes, there might result a rather a spotty coverage of the wide field of biological knowledge.

Basic or academic research, requiring sophisticated equipment, may be carried out in hospitals, in private clinics or in the community itself. What we need in our country is purposeful clinical research. We have a tremendous wealth of clinical material and if the available money and manpower resources are canalised for clinical research, it will enhance the quality of medical care to the community. Priorities in medical research have to be established in the context of our national needs and goal-oriented projects should be designed to provide solutions to such problems. Enunciation of a policy for medical research, taking into consideration the needs and resources, is important for toning up research facilities relevant to the country's medical problems.

Another important factor is that far less work is being done on disease problems of the underdeveloped world than of the affluent countries. Thus a better research base in the third world is of great importance. The old practice of going to the west for research training should be reverted. Experts from the western world should be brought to the developing countries to work in research training centres in the local setting which would materially help uncover the local disease problems.

(*Courtesy* : *The Hindu*)

Undergraduate Academic Assessment at IIT Delhi

(*Continued from page 652*)

There are joint consultative Class Committee and Course Committees which hold periodic appraisals of the functioning of course work or classwork. The functional difficulties are discussed in a joint meeting of student representatives, faculty representatives academic Heads of Departments and the Dean of Undergraduate Studies. Such deliberations provide the feedback data for bringing about improvement in instructional processes and administratiue procedures. Under the same scheme, informal student-teacher interaction is facilitated by keeping provision for mutual invitations, picnics etc. The students are also provided with an opportunity at the end of each semester to evaluate coursework and this information is used by the Course Coordinators to find out the response of students to teaching. □

CAMPUS NEWS

English refresher courses held at Shillong

A three-month refresher course for teachers of English from Arunachal Pradesh, Meghalaya, Mizoram and Nagaland was conducted by the Regional Centre of the Central Institute of English and Foreign Languages at Shillong. Dr. A.K. Dhan, the then Vice-Chancellor, North-Eastern Hill University was the chief guest. Dr. S.K. Gupta, Director of Public Instruction presided over the valedictory function.

Dr Dhan said that language had always been important and was one of man's most amazing inventions. As such it is only proper that we make a comprehensive study of language. Of late a more scientific approach has been adopted in the study of languages. Dr Dhan felt that a scientific study of language is necessary for the class room teacher as well as students.

The orientation course was inaugurated by Dr B. Pakem, Meghalaya's Minister for Education. Thirty-five teachers were deputed for this course. The Shillong Centre of the CIEFL has been conducting such courses for quite some time. But there had been a growing feeling that the duration of the course need enlargement. Therefore on an experimental basis a three-month intensive course for the teachers of north-eastern region was organised. The course concentrated on four main areas of instruction i.e. (i) Spoken English & Phonetics; (ii) Grammar, Usage, Writing, Writing & Reference Skills; (iii) An orientation to linguistics; (iv) Principles and skills of teaching English as a second language. In addition the participants also worked on a project. However, at the core of the programme were lectures, tutorials and practice classes. Demonstration and practice teaching lessons, language laboratory work, screening of films and library work were also included in the curriculum. Ample provision was made for reading both for pleasure and for course work. Believing that reading should get a prominent place in all training programmes, a considerable portion of time was devoted to inculcate in the participants the habit of reading.

At the beginning of the course each participant was presented with a kit of books. Language laboratory work was very much appreciated and so were the practice classes in spoken English but the participants seemed to find theory rather difficult to assimilate. In order to improve their ability to listen for details, a short course in listening comprehension was included in the Phonetics programme. Several Linguaphone Records (advanced course) were played to the participants and they were asked questions to test their comprehension. The questions began with general points and then went into greater detail. It was found that the listening ability of the participants did indeed improve after the course. This was shown by their ready grasp of instructions given on tape in the language laboratory.

In addition, the participants listened to a number of professional records of poems and prose passages. In both the reading and the listening classes, the attention of the participants was drawn to the use of English. In the writing class, the emphasis was more on the communicative value of written language than on its aesthetic value.

In teaching grammar, the methodology adopted was for the most part inductive. The emphasis was mostly on improving the teachers' own understanding of the topics of grammar taken up. In the units dealing with principles and skills of teaching English as a second language, much needed clarity was sought to be imparted about the implications of such notions as: teaching a second language, teaching a foreign language, the structural approach, structurally graded syllabuses, reading, writing skills, English for comprehension, the teaching of vocabulary and its importance, language errors, testing etc. In the units dealing with methodology, importance was given to the understanding of both the theoretical as well as the practical aspect of teaching. Demonstration and practice teaching classes were held at the local schools. The BBC and the British Council series of films 'Teaching Observed' was also shown to the participants. Review sessions that followed the lessons and the film shows helped make explicit a number of concepts relating to language teaching. They also provided practical examples for these concepts and often answers to classroom problems.

Apart from the above mentioned areas of instruction, the participants also took up a project. For this the class was divided into two sections. One section of the participants worked on a remedial English grammar meant for Khasi Speaking students of English. The work involved describing the syntax of Khasi and contrasting it with the syntax of English. As the other section consisted of speakers of different languages, it was not possible to concentrate on any one language group. This other section therefore adopted for its project the writing of teaching materials based on grammar. Before writing the remedial teaching material, the common errors in English of high school pupils were studied and discussed.

To give the training programme a broader base and to widen the perspective of the participants, guest speakers were invited to speak on a subject related to language and education in general. Opportunities were also provided to the participants to organize their own programmes and present them to the whole group. Quiz programmes and poetry reading were some of the activities that took place during the participants' hour.

PU conducts population surveys

The Population Research Centre of Patna University is conducting baseline survey operation in seven selected districts of the state under United Nations Fund for Population Activities Programme. Dr Devendra Mishra, Chief of the Population Research Centre said that demographic details and attitude towards family welfare programme would be recorded by different teams in the selected villages. Baseline survey in four other districts and Patna town would also be taken up shortly.

About 11,000 centres including 8,800 rural centres would be covered by the survey. He said that the baseline survey would be completed in a period of three months. The data would be processed at Bombay by the International Institute of Population Studies (IIPS). The final report of the survey is expected to be published by the end of June 1981.

On the basis of the data information family welfare action programme would be started some time in 1982. The baseline survey in Bihar would cost Rs 3.34 lakh.

Information on the following demographic aspects are being collected in the course of the survey: fertility and factors affecting it knowledge and practice of family planning methods, attitude towards family welfare programme infant child and adult mortality channels of information education and communication of family welfare programme maternal and child health and the utilisation of the services of the health and family welfare personnel.

Dr. Mishra said that the baseline survey on demographic aspect was crucial for UNFPA programme which would be formulated on the basis of reliable data collected in the selected districts. The Directorate of Health services of Bihar Government would be cooperating in this programme.

Stone-age culture in Garhwal

Dr K.P. Nautiyal, Mr D.L. Rajput, Mr B.K. Khanduri and Mr Vinod Nautiyal of the Ancient Indian History, Culture and Archaeology Department of the University of Garhwal have discovered stone-age tools representing borer, scraper point and blade which throw light on development in tool technology in the Alaknanda Valley at Srinagar and its adjoining areas. The discovery is expected to add a new dimension to the study of Indian pre-history. The culture found earlier in western Punjab (now Pakistan), Kashmir, Himachal Pradesh and even in the eastern Himalayan region of Assam was known in Garhwal and Kumaon Himalayas perhaps due to a belief that it had an inhospitable environment for the Palaeolithic man. Garhwal's early stone-age culture represents various stages from pebble tools to hand-axe cleaver and scraper. But an interesting tool (at least six of this type found from one locality) with a broad fan-shaped convex-edged and a sharp point is worth mentioning. A similar tool was earlier found at Dongargaon on the Narmada in Hoshangabad (MP). This specialised tool points out towards the evolution of stone-age industry in Garhwal as also towards its ecological conditions when the early man might have used such tools for hunting or cutting. However, no fauna has yet been recorded.

Bihar universities to introduce triple benefits

All the employees of the universities in Bihar would be entitled to the triple benefits consisting of Provident Fund, Gratuity and Pension. Dr A.R. Kidwai, Chancellor of Bihar Universities has given his formal sanction to the recommendations of the Inter-University Board in this regard. The Chancellor has also approved the scheme for the regularisation of the services of temporary teachers. Under this scheme all temporary lecturers possessing the statutory qualification and completing two years of service by the end of December 1980 would be made permanent. The selection committees of the universities have been asked to regularise the services of all the temporary teachers possessing the required U.G.C. qualifications. The third important step was with regard to the personal promotion of lecture as readers. Lecturers having 13-year experience and holding

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Bibliography of Doctoral Dissertations
Biological Sciences
1970-75

Association of Indian Universities
Deen Dayal Upadhyaya Marg
New Delhi-110002

Ph.D. degree and those having 18-year experience without a Ph. D. degree would be entitled to automatic promotion to the post of a Reader. These promotions, however, would be treated personal promotions. Similarly, the demonstrators having UGC prescribed qualification who have completed 7-year continuous service would be eligible for the post of lecturers.

Santiniketan holds oriental conference

While inaugurating the 30th session of the All-India Oriental Conference, Dr Uma Shankar Joshi, Chancellor of the Visva Bharati said in Santiniketan that an intensive pursuit of oriental studies could give a clear understanding of the composite Indian culture. He said that oriental studies should be related with the current human situation besides having links with the present state of human knowledge. He expressed the hope that the knowledge of the East and West would lead to some perennial philosophy and foster a harmonious relationship in the world.

The West Bengal Governor and Rector of the Visva Bharati, Mr. T.N. Singh, who was the chief guest at the function urged the orientalists to understand the modern times in their proper perspective.

Technical University for Punjab

Punjab will soon have a technical university for the proper development of technology in the State. A high level committee of Punjab Agricultural University experts has been constituted under the chairmanship of Mr I.C. Puri, Chief Secretary of the State. At present the Industries Department looks after 100 industrial training institutes and the Technical Education Department takes care of the polytechnics. It is hoped that the development of technology in the State will move smoothly and the work can be coordinated in a better way through the proposed technical university.

Pune Institute for medieval Indian History

An institute for the study of medieval India has been set up at the Bharat Itihas Sanshodhan Mandal in Pune in memory of the late Mahamahopadhya Datto Waman Potdar, a renowned historian who died a year ago. The Mandal will make available to the institute about 1.5 million historic documents in Persian, Sanskrit, Kannada, Marathi, Portuguese and French. Besides, 1,200 miniature paintings and 7,000 coins of the medieval period—1100 to 1800 AD.

Andhra varsity confers honorary degrees

The Andhra University, at its 53rd convocation conferred an honorary degree of D. Litt. on Prof. Niharrarjan Ray for his outstanding contribution to art, literature and culture.

Mr. K.C. Abraham, Chancellor of the University, said Prof. Ray was a doyen among historians, a scholar and writer of international repute. He was not only an authority on Indian and south-east Asian history but also art and archaeology. As scholar, teacher, writer and writer, Prof. Ray "embodies the noblest and the best in Indian thought and culture," the citation noted. Among others who received honorary doctorates were Dr. Mulk Raj Anand, Dr. S. Varadarajan and Mr. Ravuri Bharadwaj.

New universities for Tamil Nadu

The Bill for the amendment of the University Acts in Tamil Nadu is likely to be introduced in the State Legislature during the winter session. The Bill for the creation of two more universities in Triuchi and Coimbatore was already before the Union Government awaiting their final clearance.

In the mean time an expert committee headed by Dr. V.S.P. Manikkam, Vice-Chancellor of Madurai, Kamaraj University has been set up by State Government on the setting up of a Tamil University. The other members of the committee are: Mr. M.P. Sivagnanam, Chairman, Mr K.A.P. Viswanathan, Dr V.C. Kulandaiswamy, Dr Salai Elanthiraiyan of New Delhi, Dr S.V. Subramaniam, Director, International Institute of Tamil Studies, Madras, Dr M. Nannan, Director of Tamil Development and Mr R. Meenakshisundaram, Under Secretary, Education Department.

Microbiology to solve food problems

Dr. F. Fernandes of Bombay University said that Microbiology had an important role to play in the developing world because of its limitless possibilities in resolving food problems. He was inaugurating the 21st annual conference of the Association of Microbiologists of India. He laid stress on the fact that microbiological technology was a low cost process suitable for the economic uplift of the developing countries. Dr. R. Ananthanarayan, President of the Association, pleaded for proper facilities for training and educating microbiologists at every level in the country.

Madras correspondence courses make headway

The Correspondence Course scheme of the Madras University would be formally inaugurated in 1981. Dr. G.R. Damodaran, Vice-Chancellor of the University, said in Madras that careful preparatory work has already been initiated. The assignments would be carefully planned and a Director and Deputy Directors would be appointed soon to run the courses.

The internal assessment scheme for the undergraduate courses may also be given up as there was a feeling that it was not being worked properly and the college teachers were dissatisfied with this system. The Vice-Chancellor felt that the whole system needs re-assessment.

Tribal university proposed

The Chief Minister of Andhra Pradesh, Mr. T. Anjiah, said in Hyderabad that the State cabinet has agreed in principle to the proposal to set up a tribal university near Salur. A trust has been constituted for this purpose and the other details are expected to be worked out soon.

UGC extends research collaboration programme

A collaborative research project, sponsored by the University Grants Commission, between the Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore and Birkbeck College, London, has yielded promising results. The project has been extended by the Commission for another five years, that is, until April next year because of its industrial potential. The Commission has approved grants totalling Rs 6 lakhs for the project which deals with phosphazenes, a group of phosphorous-nitrogen compounds. These compounds have been the subject of special study by several other developed countries also. But the progress achieved by the Indian collaborative project is stated to be far in advance of others. A breakthrough achieved under the Indian project is the discovery of bicycling phosphazenes. The potential areas of application would include fame retardance for textiles. The structural features of these compounds are so novel that it is now planned to test them biologically over a wide area of applications like pesticides, plant growth pharmaceuticals etc.

The Indian Institute of Science, Bangalore, has already suggested to the Indian Council of Agricultural Research a collaborative programme involving agricultural chemists and soil scientists at the University of Agricultural Sciences, Bangalore. Another area of collaboration is with the Indian Space Research Organization on the possible application of phosphazene polymers in space technology.

Education to continue on the concurrent list

Mr. S.B. Chavan, Union Education Minister, told the Parliamentary Consultative Committee of his Ministry that education will remain on the concurrent list of the Constitution. The present arrangement has been found adequate for a flexible and decentralised system of education. Besides being satisfactory it was also within the federal system. He said the principal aim of modern education without totally sacrificing its liberal content was to equip the youth with such skills as were needed in society. He stressed the need for vocational education as its aim was to produce entrepreneurs specialising in agriculture and cottage industries. He assured the members that the government had a keen desire to help the students of scheduled castes and scheduled tribes in joining technical institutions. The scheme, he said, had already been prepared for coaching them for the reserved seats in the IITs over other technical institutes. The technical education bureau of the Ministry was also examining another scheme to spot talented students from these communities on the basis of their performance in the tenth class and give them special scholarships in selected central schools. This would equip them better for higher studies in professional institutions.

The question of university level textbooks in regional languages was also discussed. The Minister informed the members that eighty three out of one hundred fifteen universities were providing facilities for regional languages as the medium of instruction.

News from Agril. Varsities

ICAR workshop on biological control

The Third Annual Workshop of the All-India Co-ordinated Research Project on "Biological Control of Crops—Pests and Weeds' organised jointly by the Indian Council of Agricultural Research (ICAR) and the Punjab Agricultural University was held recently at Ludhiana. Dr. D.N. Srivastava,Deputy Director General (Crop Science) of the ICAR presided over the plenary session. Besides the scientists from fourten centres of the Project, other eminent participants included Dr J.W. Turner from Australia and Dr V.P. Rao and Dr. T. Sankaran of the Commonwealth Institute of Biological Control, Bangalore.

In the recommendations made in the concluding session it is said that the results of the research conducted during the last two years have clearly shown that the destructive mealy-bug pest of coffee and citrus in South India can be satisfactorily controlled by predator which was introduced earlier from Australia. The participants of the Workshop recommended the feasibility of controlling the potato tuber moth in the field through the use of exotic parasites. The experts also recommended the mass-scale production and use of tiny parasites known as *Trichogramma* and the indigenously identified viral pathogens, both of which attack caterpillar pests of cotton, tobacco and pulses.

The Workshop reviewed and discussed the existing research activities and finalised the future programmes realigning the priorities based on the latest research findings. The Workshop suggested that the present extension efforts in the biological control of *pyrilla* of Sugarcane and San-jose scale of apples should be intensified to cover other areas presently not covered.

Cheema urges check on adulteration in animal feeds

The Vice-Chancellor of the Punjab Agricultural University, Dr. Amrik Singh Cheema, told a symposium on poultry management that there had been a rapid and almost un-checked increase in the adulteration of feeds for animals. It was now virtually impossible, he said, to obtain unadulterated rice bran or groundnut cake which formed the bulk of poultry rations. Dr. Cheema appealed to the Government to undertake immediate measures for proper check of the feed quality. The adulterators, he said, were jeopardising the growth of poultry. The symposium was organised by the Compound Livestock Feeds Manufacturers, Association of India which has over 100 members in all States including Government institutions. Apart from poultry farmers, the participants in the symposium included the specialists in different aspects of poultry science, the feed manufacturers and those engaged in the manufacture and trade of materials connected with poultry production and marketing.

Dr. Cheema said that 60 to 70 per cent of the total cost on poultry went to feeding. If the poultry farmers can get compounded feed of dependable quality at reasonable cost they were relieved of the work of collecting and mixing individual feed ingredients. The feed manufacturers, he said, had the resources to set up their own laboratories and ensure quality of food. The Vice-Chancellor drew the attention to the increasing incidence of toxic matter in groundnut cake and emphasised the necessity for establishing laboratories to check the presence of such substances.

Dr. Cheema said the Punjab Agricultural University had been able to develop high-yielding strains both of the egg type and meat type chickens. They were equal to the best of the international poultry stocks. Poultry, he said, was a very suitable occupation for small farmers and landless labourers in the villages. If arrangements were made for the supply of feeds, marketing of eggs and birds and for providing regular technical guidance, the weaker sections could successfully take to it.

The Chairman of the Compound Livestock Feeds Manufacturers' Association of India Dr. N. Satapathy, emphasised the advantages of large scale poultry operations which had brought about spectacular development in this field in the advanced countries. He said the tiny units raised by poor people should be linked together so that all modern scientific management methods can be effectively employed. The annual egg production estimated at 12,000 million should be raised to one lakh million eggs, if every person in India had to have an egg per day, he said.

New highyielding and disease resistant linseed varieties produced by JNKVV

Oilseed research group at Jawaharlal Nehru Krishi Vishwa Vidyalaya have developed four new cultures of linseed, viz; SRS 49-2, SRS 23-10, SRS 30-3 and SRS 30-5. Their performance evaluation at 11 different locations in the country for the last two years have proved them as out-yielders to the established varieties in the country and also as resistant to powdery mildew and rust diseases. The mean average production has come to 863, 927, 926 and 780 kg/ha respectively. In the All India Research Workers meeting on Linseed and Safflower held at Ranchi from September 18 to 20, 1980, the work carried out at the Jabalpur Centre was recognized and rated high. These varieties are under further test and shall be available for general cultivation soon.

Statistical techniques for predicting rainfall evolved

A new statistical technique for the prediction of seasonal rainfall fairly accurately is now being used for monthly forecast by thirty meteorological sub-divisions. The technique uses a mathematical model on "Auto Regressive Integrated Moving Averages". The model assumes that the statistical properties of the behaviour of meteorological elements like rainfall are partly determined by its past history and partly by random changes. Dr. M.S. Swaminathan, Member, Planning Commission, addressing the conference of scientists at the Indian National Science Academy on rainfall and dryland agriculture said that the results obtained by ARIMA model had been encouraging for the last two years. The method predicted a 15 per cent deficiency in rainfall in Northwest and the India Peninsula and the prediction was right even though the actual deficiency was larger. Similarly for this year the prediction was normal over the Peninsula and above normal over Northwest India.

The prediction of this kind was extended to obtain monthly forecast for ten meteorological sub-divisions. The forecast was current in fifteen sub-divisions and in ten sub-divisions the forecast was partially right and the method was not successful in the remaining five sub-divisions. The technique is being improved after this experiment.

Asian seminar on blood protozoan diseases held at HAU

To improve the present food situation and economy of India, it is essential to obtain increased production from animals and hence we should intensify livestock improvement programmes throughout the country. Dr. P.S. Lamba, President of Indian Agronomy Society while delivering the presidential address in the Asian Seminar on Haemoprotozoan Diseases held in the College of Basic Sciences & Humanities, H.A.U. Hissar, made these remarks. Dr. Lamba said that the exotic breeds of cattle and the cross bred animals produced by crossing the indigenous cattle with exotic blood are highly susceptible to many diseases. The most important among them are haemoprotozoan diseases, like theileriosis, babesiosis, anaplasmosis and trypanosom and these diseases not only result in deaths of affected animals but also in perpetual economic losses in the form working inability, ill health and loss of milk, meat and wool production. About one hundred scientists from various parts of India and several other countries like Australia, Bangladesh, Malaysia, Singapore, Sri Lanka and United Kingdom participated.

Role of fibre in human nutrition discussed at Hissar

A three-day National Conference on Role of Fibre in Human Nutrition, was organised by the College of Home Science, Haryana Agricultural University, Hissar. While inaugurating the conference, Dr. P.S. Lamba, President of Asian Agronomy Society, said that number of diseases were found to be related to the fibre nutrition in the developed countries also where people consumed less fibre in their daily diets. These infectious degenerative diseases were cancer of colon and rectum, diabetes, ischaemic heart diseases etc. Dr. Lamba urged the scientists to do intensive research work on important aspects of fibre because it is important for maintaining normal health. The conference was financed by the University Grants Commission in which over twenty nutritionists from all over the country participated.

Udaipur organises seminar on effective use of farm machinery

A training-cum-discussion seminar of agricultural engineers of various states was organised at the Directorate of Extension Education of University of Udaipur. This seminar was sponsored by Director, Extension Training, Ministry of Agriculture & Irrigation, Govt of India. Nineteen agricultural engineers from U.P. Maharashtra, Punjab, Rajasthan, Gujarat, Manipur, Goa-Orissa, Tamilnadu, Pondicherry, Kerala, Assam, Madhya Pradesh, took part in the seminar. During the deliberations the problems regarding farm machinery use and causes of low energy utilization were identified and the specific recommendations for popularization and effective use of farm machinery were finalised.

The concluding session of the training was held under the chairmanship of Dr. R.M. Singh, Director, Exp. Station, Udaipur. He asked the Agriculture engineers to bring about the improvement in the small hand tools and machinery, and take the fruits of the researches to the farmers.

Birsa varsity to boost agricultural development

The proposed Birsa Agriculture University at Ranchi would work as the nucleus of farm revolution in the heart of the tribal region of the State. A sum of Rs. 10 crores has been sanctioned by the Indian Council of Agricultural Research for the development of this University. The University Grants Commission is also likely to assist in the development of the university.

New Peas varieties evolved at Kanpur

The Chandra Shekhar Azad University, Kanpur, has developed new high-yielding varieties of Peas. Rachna peas which is moderately resistant to powdery dew gives 20 to 25 per cent higher yield than the recommended variety T163. It has 22.5 per cent protien. Nirmal madua gives 60 per cent higher yield than the recommended variety T-36B It is resistant to blast disease. Both the varieties have been developed under the leadership of Prof. Hari G. Singh, Dean, College of Agriculture of the university.

Awards

Hari Om Awards for 1976 announced

The University Grants Commission announced the Hari Om Ashram Trust Awards for the year 1976 in the fields of Theoretical and Experimental Sciences, both physical and biological.

Prof. Krishnaji of the Allahabad University received the Sir C.V. Raman award for experimental research in physical sciences.

The Homi J. Bhabha Award for research in applied sciences was shared by Prof. R. Narasimhan of the Tata Institute of Fundamental Research, Bombay and Prof. R. Narasimha of the Indian Institute of Science, Bangalore.

Prof. K. Ramachandra of the Tata Institute of Fundamental Research, Bombay, received the Dr Meghnad Saha Award for research in Theoretical Sciences.

The Sir Jagdish Chandra Bose Award for research in Life Sciences was jointly shared by Prof. C.S. Vaidyanathan of the Indian Institute of Science, Bangalore and Prof. G.K. Manna of the Kalyani University.

The awards were instituted by the Commission in 1974 with an endowment of Rs six lakhs from the Hari Om Ashram Trust. It carries a cash award of Rs 10,000 each.

Agricultural challenges in Kashmir

Excerpts from the convocation address delivered by Dr. M. S. Swaminathan, Member Planning Commission at the University of Kashmir.

Our University system of education is under severe stress. While we have created a vast infra-structure for higher education, the pace and pattern of economic development have not been able to derive full advantage from the vast number of graduates and post-graduates that our universities train each year. While opportunities for gainful employment for educated youth have been limited by our slow progress on the economic front, many analysts believe that it is due to lack of attention to relevance and excellence in our educational programmes that the educated manpower is unable to trigger a self-replicating model of economic emancipation of the rural and urban poor. It is thus clear that we should look critically into the factors responsible for inadequate linkages among education, employment and development.

An analysis of the constraints operating in our university education system suggests that the following five major groups of factors ought to be carefully studied with reference to the situation prevailing in each university:

(a) Political will and university autonomy;
(b) Management of universities, departments and colleges including student participation;
(c) Academic culture of the faculty;
(d) Problems of first generation learners; and
(e) Financial resources.

Whenever the university education system is discussed, only financial constraints tend to get highlighted. In my view, while adequate financial support is exceedingly important, the role of non-monetary inputs in improving the quality of education should receive equal attention. The educational traditions of our country in the past bear ample testimony to the significance of cost-free inputs in promoting scholarship.

In this context, I would like to congratulate this University as well as the Government of Jammu and Kashmir on the various initiatives taken for reaching the benefits of education to the deprived and underprivileged sections of the population, such as the nomadic shepards. In fact, our education system should pay special attention to the problems of first generation learners and migrant labour. With rapid agricultural progress in North-West India, there is considerable movement of labour from Bihar and Eastern U.P. Similarly, farmers engaged in animal husbandry have to move over long distances in the hill states looking for nutrition for their animals. The third important group of migrant labour belong to the category of construction workers. Women and children belonging to such families suffer from serious hardships and handicaps. Women bear a triple burden—hard labour with no opportunities for professional advancement, home-making in apalling living conditions and motherhood without any facilities or supportive services for the children. Children also bear the burden of triple deprivation—poverty, the adverse consequences of high mobility of the parents and neglect due to both the parents having to be engaged in work. These problems of migrant labour and shepards need to be attended to on the basis of a location specific malady-remedy analysis. I am happy that this is now being done in this state.

The Chancellor of this University was a Member of the "Independent Commission on International Development Issues", popularly known as the "Brandt Commission". This Commission in its Report entitled "North-South: A Programme for Survival" has underlined the urgency of attending in a coordinated manner to the basic human needs of the people of the poor nations. The Commission has urged that an action programme be launched comprising both emergency and long-term measures to assist the poverty belts of Africa and Asia. Measures would include projects relating to water and soil management, the provision of health care, eradication of malaria, encephalitis and other vector-borne diseases, afforestation, solar energy development, population stabilisation, mineral and petroleum exploration and support for industrialisation, transport and other infrastructural development. The Commission has rightly stressed that development has become another wolrd for peace.

Jawaharlal Nehru once said that we are a poor people inhabiting a rich country. The validity of this statement is obvious from the surroundings in which this Convocation is being held. Nature has endowed this State with a great potential for the growth of horticulture, silviculture, animal husbandry and tourism. It is the duty of our universities to contribute effectively to the process of converting the natural endowments into wealth meaningful to the people. Recently, the Planning Commission had held discussions with the Vice-Chancellors of the 12 universities located in the himalayan region. These universities together have over 1,00,000 students and staff members. They can thus become potent instruments of stimulating the rapid eco-development of the hill States. At this meeting the universities offered to participate actively in work relating to regional development and ecological rehabilitation.

I would now like to refer briefly to some of the areas in agriculture, horticulture, forestry and allied sectors which provide immense opportunities for increasing the prosperity of the State and which deserve more intensive attention from the research and extension angles.

Agricultural assets

Because of the great diversity of climate and soil met within the State, the area is endowed with a rich variety of plant wealth, including medicinal plants.

The Jammu area has the subtropical dry type of forests in the Siwaliks zone. The predominant species are of thorny scrub type with *Acacia modesta, Olea ferruginea, Dodonaea viscosa, Carissa spinarum, Adhatoda vasica, Albizia lebbeck, Ziziphus mauritiana* with a *sprinkling* of *Acacia nilotica* (arabica), *Dalbergia sissoo, Pinus roxburghii, Bombax ceiba, Cassia fistula, Mallotus philippensis* etc.

As one crosses over from Jammu side into the Kashmir Valley, there is an abrupt change in the general landscape and the flora. The slopes of Pir Panjal are completely barren and the valley is wide open. At the valley floor thee rare the green fields and the most conspicuous tree lining the highways is the Poplar (*Populus nigra* cv italica) which was introduced there during the Moghul period. There is the complete absence of chirpine and Oaks. There are the famous apple orchards and the saffron fields at Pampur. The water courses are completely planted up with willows, primarily for the purpose of serving the sports goods industry and also for wicker work. Another most conspicuous feature in the landscape of the valley is the stately chinar (*Platanus orientalis*). These are wide spreading trees of immense girth and are believed to have been introduced about 400 years ago.

The incidence of grazing by sheep and goats is one of the most severe in the alpine meadows. Large flocks of these grazing animals eat away much of what is palatable to them and leaving out most of the species which are unpalatable or poisonous. Thus there is predominance of poisonous plants at high altitudes, a large number of which are of medicinal value. The grasslands in the temperate zone abound in a deadly poisonous grass *Stipa sibirica* for the same reason. Local horses and cattle have learnt to leave it alone and thus vast areas are occupied by this tall, poisonous grass.

The innermost region of Kashmir comprises the trans-Himalayan cold desert of Ladakh which is reached after crossing the Zojila. The entire area is conspicuous by the absence of tree cover or vegetation on the barren hillsides, Biotic factors being mostly the contributory cause. No area is below 3000 m. The rainfall being extremely scanty and climate being rigorous, the natural vegetation is too sparse. Cultivation of Poplars, Willows, *Prunus*, Apples and other fruit trees is possible only along the course of the Indus and other rivers, so is also the cultivation of crops.

Forest Area

Total forest area—138124 sq. kms.

The forests in this State have a special protective role as they occur on mountain slopes.

Importance of Poplar and Salix culture in the valley

There is a world-wide shortage of timber resources to meet the ever increasing demand of wood raw material for various wood based industries. The supply of packing cases for packing fruits produced in Kashmir Valley is a burning problem and the indigenous coniferous forests will find it increasingly difficult to meet this rapidly expanding demand without irreparable degradation to environment. Poplar wood is a suitable raw material for packing cases for fruits in Kashmir Valley. In Kashmir Valley, *Populus nigra* has been traditionally the most widely cultivated poplar together with the clones of *P. deltoides*, and *P. xeuramericana* in agricultural land, as roadside avenue trees and in irrigation canal banks.

Silviculture in Jammu & Kashmir has, so far, primarily considered the extractive aspects of trees growing and forest management. That is, it has been primarily concerned with the growing and development of forests for meeting timber needs of such wood-based industries as construction, railway sleepers,

SHORTLY RELEASING

— **Bibliography of Doctoral Dissertations**

Natural & Applied Sciences] **1978-79**
Social Sciences & Humanities]

— **Universities and National Development**

— **Sports Management in Universities**

Association of Indian Universities
Deen Dayal Upadhyaya Marg
New Delhi-110002

etc. However, those aspects of silviculture which assist in promoting the flow of amenity resources like recreation, tourism, etc., that enter directly into the utility functions of final consumers, now also needs to be developed as they are gaining considerable importance. Silviculture, so far as Jammu & Kashmir is concerned should, therefore, have two prime objectives in view. First, as it relates to extractive aspect, namely, the growing of tree species for conversion into utilisable goods, and secondly, as it relates to growing of trees for recreational purposes. This second aspect of silviculture needs to be given careful consideration especially since tourism is an important aspect of the Jammu and Kashmir economy, particularly so far as the rural areas are concerned.

An important problem is the regeneration of the coniferous species found in the forests of Jammu & Kashmir. Natural regeneration poses considerable difficulties and artificial regeneration, apart from being expensive, is also not always possible. Accordingly, from the research point of view, the natural regeneration aspect has considerable importance. This is an item on which further investigation is considered necessary.

Agro-forestry

Nothing much needs to be mentioned about the utility of agro-forestry so far as the rural economy of Jammu & Kashmir is concerned. Already, many *chinar* trees have been grown by the farmers adjacent to agricultural lands, especially in the valleys. There is, however, scope for further development of farm forestry through the growing of other utilisable tree species such as poplars which are fast growing and have a ready market. In some cases poplar growing may eventually be found more profitable than raising agricultural crops, particularly on marginal and sub-marginal lands. Considerable research on clones suitable for the purpose will, however, be required, and this is an aspect which may be taken up by the Kashmir University also.

Sericulture

The traditional sericulture in the State of Jammu and Kashmir is cultivation of mulbery silkworm (*Bombyx mori*). It may be mentioned that *Bombyx mori* is probably indigenous in the Republic of China where it had been domesticated for centuries.

Under domestication, *B. mori* has evolved into numerous races producing cocoons that vary in size, shape and weight and also in colour ranging from yellow to white. Some races are univoltine and others are bivoltine or multivoltine. This insect species seems to have toiled ceaselessly for over 35 centuries to satisfy the man's and women's demand for adornment.

It's food-plant is Mulberry, *Morus alba* which has also evolved into numerous varieties for its growth under different treatments, and in different climates to produce foliage which has a high nutritive value conducive to high productivity of silk by the silkworm. Through hybridisation and basic genetical studies it is now possible to grow disease resistant high-yielding varieties of silkworm.

Wildlife farming

Kashmir is very well suited for farming of musk deer and some fir animals. This aspect hence deserves more attention.

Development of white button mushroom industry

In Kashmir Valley, cultivation of white button mushroom (*Agaricus bisporus*) on a cottage scale in rural areas has had phenomenal success. The sale of spawn bottles has increased from 100 bottles in 1969 to 30,000 bottles in 1979 raising the yield from one tonne to 200 tonnes. The value of the crop in 1979 is about Rupees thirty lakhs. Almost the entire income goes to the rural poor. A marginal farmer with a minimum investment of about Rupees one thousand can earn a profit of rupees three to four thousand annually. Mushroom cultivation is labour intensive and rice or wheat straw is available with the farmers. This activity is also free of pollution hazard as the refuse i.e. spent compost, can be used as manure on the lands, thus establishing recycling principles. Based on the available raw material resources, there is tremendous potential of production. Experts estimate that in Kashmir Valley alone production of about 40,000 tonnes of mushrooms valued at Rupees forty crores can be achieved. There is also scope in the country of establishing cottage scale industry of other edible mushrooms i.e. paddy straw mushroom (*Volvariella* spp.) and Dhingri (*Pleurotus* spp.) Besides increasing the income, edible mushrooms have good nutritive value, being rich in proteins, minerals and some vitamins.

Sheep and goat husbandry

This State had 1.22 million sheep according to 1977 census, representing an increase of 0.15 million over the 1972 population. Since 1951, the sheep population has not shown very perceptible change. The goat population in 1972 was 0.57 million, 1977 census figures are not yet available. Important breeds of sheep in J&K are Taddi, Gurez, Karnah, Bhakarwal, Poonchi and Changthangi. The State has a separate Department of Sheep Husbandry which has rendered outstanding service in the development of sheep especially for apparel wool production in the State. The State has the largest number of exotic fine wool sheep imported from USSR and other countries and has been engaged in crossbreeding native sheep with Merinos for apparel wool production over the last 50 years. The native sheep mostly produce good carpet/medium apparel wool ranging from 0.5 to 1.5 kg. The crossbreds especially with 75% Merino inheritance produce 2.8 kg. of fine apparel wool comparable to that of imported Merinos. One-third of the population of sheep especially involving Bhakarwal and Poonchi, the two important migratory breeds is crossbred with variable level of Merino inheritance.

I have not so far referred to horticulture. The progress made in Kashmir in improving the production of fruits, particularly apple and temperate vegetables is commendable. You are well aware of the vast growth in the production of apples and other fruits leading to problems in the area of packaging, transport and marketing. It is very essential that we develop soon packaging and delivery systems which are compatible with the growth and maintenance of forests. The State Government has already initiated several steps designed to minimise the use of good timber for making packing cases.

While the agricultural assets and potential of Kashmir are great, we should not overlook the fact that the basic life support systems including soil and water, flora and fauna are under stress due to the growing pressure of human and animal populations. Many pastures are today infested with non-edible grasses like *Stipasibirica*. The change in the proportion of edible and non-edible plants in pasture lands is a good index of the pressure of animal population on land. Such changes represent early warning signals and the scientists of the University should study their economic and social implications.

Advertisement

Haryana Agricultural University

(*Contd. from page 670*)

8. **Disease Investigation Officers:** (Two): i) Second class B.V.Sc./B.V.Sc. & A.H. degree. ii) Second class M.V.Sc. in Epid./Pathology/Bact./Preventive Medicine / Parasitology. iii) Ph.D. degree in Epidemiology/Pathology/Bact./Preventive Medicine/Parasitology. iv) Five years experience of research/teaching/extension/investigation of livestock and Poultry diseases.

9. Assistant Professor of Pharmacology: (One).

10. Assistant Scientist (Surgery & Radiology): (One).

11. Assistant Professor (Vety: Virology): (One).

12. Assistant Professor in Vety. Anatomy: (One):

13. Assistant Professor (Vety Pathology): (One).

14. Assistant Professor (Vety. Medicine): (One).

15. Assistant Scientist (Soils): (Seven).

16. Assistant Scientist (Plant Pathology): (One).

17. Assistant Scientist (Plant Breeding): (Nine).

18. District Extension Specialist (Vegetables): (One).

19. Assistant Agronomist (Cereal Crops): (One).

20. Assistant Agronomist (Soil & Water Management): (One).

21. Assistant Scientist Horticulture Department): (One).

22. Assistant Scientist (Agronomy): (Two).

23. Assistant Professor (Psychology): (One).

24. Assistant Professor of Genetics: (One).

25. Assistant Professor (Physics): (One).

26. Assistant Professor (Agril. Economics): (One).

27. Assistant Scientist (Agril. Economics): (One).

28. Assistant Scientist (Animal Breeding): (One)

29. Assistant Professors (Foods & Nutrition): (Three)

30. Assistant Professor (Home Management): (One)

31. Assistant Professors (Clothing & Textiles): (Three)

32. Assistant Professor (Child Development): (One)

Qualifications (For posts at Sr. Nos 9 to 32)

i) At least second class at Bachelor's level. ii) Master's degree in the first class or with an OGPA of not less than 3.2/4.00 or equivalent in the Discipline. concerned OR at least seond class Master's degree followed. by Ph.D. in the discipline concerned

33. **District Extenison Specialists Home Science):** (TEN): i) Atleast second class B.Sc. in Home Science. ii) Master's degree in the first class or with an OGPA of not less than 3.2/4.00 or equivalent in Home Science/Home Science Extention Education/Extension Education. OR Atleast second class Master's degree followed by Ph.D. in Home Science/Home Science Extension Education/Extension Education.

34. **Farm Manager:** (One): i) Second class B.Sc./B.Sc. (Agril.). Second class M.Sc. (Ag.) with 3 years experience of independent management of a large Agril. Farm. OR second class B.Sc. (Ag.) with 5 years experienee of independent management of a large Agril Farm.

35. **Badminton Coach**: (One): Essential: i) Bachelor's degree with atleast 1-year course leading to diploma in Physical Education. ii) N.S./N.I.S. diploma in concerned sport (Badminton). iii) M.P.E. regular course/M.P.E. (Summer Course)/M.E.Ed. (1-year course)/M.A. in Paysical Education (2-year course)/M.P.Ed. (2-year course). iv) At least 3 years coaching/teaching experience in a College/University. v) Participation in Inter-University/State/National/International level in Badminton. Desirable: i) Qualified official in the concerned sport. ii) Publication of Books/Articles in Journals. iii) Coaching Inter-Varsity / State/ National /International teams.

Note: 1. For posts at Sr. Nos. 1 to 8, one or more qualifications relaxable in case of candidates found otherwise outstanding.

2. Special weightage will be given to extension experience possessed by the candidates, for posts in disciplines amenable to extension.

3. For posts at Sr. Nos. 9 to 33 & 35, one or more qualifications relaxable in case of candidates found otherwise very suitable.

4. For posts at Sr. Nos. 9 to 33, persons who do not posses Ph.D. at the time of their selection shall not be allowed to cross the stage of Rs. 1300 in the scale of Rs 700-40-1100-50-1300-50 1600.

5. No. of posts mentioned against each post is likely to vary.

6. 20% and 5% vacancies of Assistant Professors and equivalent are reserved for Scheduled Castes and Backward Classes candidates respectively, if suitable candidates from these categaries are available.

Pay Scales

Sr.No.	Pay scale of post.	Total emoluments at the initial of the pay scale (exclusive of House Rent).
1 to 3	1500-60-1800-100-2000-125/2-2500.	Rs 1960
4	1500-60-1800-100-2000.	Rs 1960
5 to 8	1200-50-1300-60-1900.	Rs 1627
9 to 33	700-40-1100-50-1600,	Rs 1066
34 to 35	700-40-1100-50-1300.	Rs 1066

REGISTRAR

Conferences, Seminars & Workshops

December—1980

Date	Title	Venue	Sponsoring Body
24 Nov—5 Dec. 80	Cost Estimating and Pricing.	Bombay	National Inst for Trng in Industrial Engineering.
24 Nov—5 Dec. 80	Production Management	Bombay	National Inst for Trng in Industrial Engineering.
1 December 1980	Radioanalytical Chemistry.	Bombay	Institute of Science, Bombay.
1 Dec—5 Dec. 80	IInd Conference of the Indian Society for Theory of Probability and its applications.	Bombay	Moths. Department IIT., Bomboy
1 Dec—12 Dec. 80	Quality Control.	Bombay	National Institute for Training in Industrial Engineering.
1 Dec—12 Dec. 80	Managerial effectiveness.	Bombay	National Institute for Training in Industrial Engineering.
1 Dec—28 Feb. 81	Human nutrition	Hyderabad	National Inst of Nutrition.
2 Dec—3 Dec. 80	Productivity & Trade Union.	Jaipur	National Productivity Council.
4 Dec—6 Dec. 80	Fertilisers in India in the Eighties.	New Delhi	Fertiliser Association of India.
4 Dec—7 Dec. 80	Stochastic Processes and applications.	Ootacamund	Inst. of Mathematical Sciences, Madras.
6 Dec—14 Dec. 80	Prof AB Biswas Memorial Symposium & Annual convention of Chemists 1980.	Bombay	Chemistry Department IIT, Bombay.
7 Dec—12 Dec. 80	Experience in Management.	Agra	All India Management Association.
8 Dec—9 Dec. 80	Energy Conservation in Diesel generators.	Calcutta	National Productivity Council.
8 Dec—9 Dec. 80	Management of Foreign Technical Collaboration in India	Bombay	All India Management Association, Indian Investment Centre & Bombay Management Association.
8 Dec—10 Dec. 80	Tourism & Marketing of Hotel Services in India.	Bombay	National Productivity Council
9 Dec—10 Dec. 80	Tribology in Power Plants.	Delhi	National Productivity Council.
11 Dec—15 Dec. 80	Nuclear Physics & Solid State Physics Symposium.	Delhi	Department of Atomic Engery.
14 Dec—18 Dec. 80	Second Congress of the Federation of Asian & Oceanian Biochemists, and Golden Jubilee Annual Meeting of the Society of Biological Chemists (India).	Bangalore	Society of Biological Chemists.
15 Dec—16 Dec. 80	National workshop on energy from the sea.	Goa	National Institute of Oceanography.
15 Dec—20 Dec. 80	Workshop on Route Planning & Scheduling.	Pune	Central Inst of Road Transport.
16 Dec—17 Dec. 80	Joint Councils—Status reviews.	Ahmedabad	National Productivity Council.
16 Dec—17 Dec. 80	Workers development.	Jamshedpur	National Productivity Council.
16 Dec—18 Dec. 80	Decision network.	New Delhi	National Productivity Council.
18 Dec—21 Dec. 80	Annual Conference of the Neurological Society of India	Calcutta	Neurological Society of India.
18 Dec—21 Dec. 80	'GEOTECH-80': A conference on goetechnical engineering	Bombay	C.S.R.E.
19 Dec—20 Dec. 80	8th National Management Convention: Management of Technology—Todayand Tomorrow.	New Delhi	All India Management Association.
20 Dec—22 Dec. 80	International symposium on Water Resources Systems.	Roorkee	Water Resources Development Training Centre, Univ of Roorkee.
21 Dec—24 Dec. 80	Workshop on Sound Transmission in coastal seas.	Bangalore	Electronics Commission.
21 Dec—11 Jan. 81	Winter School in solid state & structural chemistry	Bangalore	University Grants Commission.
22 Dec—23 Dec. 80	Quality Motivation.	Madras	National Productivity Council.
22 Dec—24 Dec. 80	Electron Microscopy.	Vallabh Vidyanagar	Sardar Patel University.
23 Dec—24 Dec. 80	Seminar on 'Fluid Mechanics and Fluid Power,	Bombay	National Soc. for Fluid Mechanics & Fluid Power.
26 Dec—28 Dec. 80	Indian History Congress.	Bombay	Bombay University
26 Dec—30 Dec. 80	V High Energy Physics symposium.	Cochin	Tata Inst of Fundamental Research.
27 Dec—29 Dec. 80	Workshop on Corporate Energy policies	Madras	National Productivity Council.
27 Dec—30 Dec. 80	Annual Conference of the All India Women's Conference.	Amritsar	All India Women's Conference.
27 Dec—31 Dec. 80	54th All India Educational Conference.	Kurukshetra	All India Feferation of Edul Association.
30 Dec—1 Jan. 81	40th Annual Conference of the Indian Society of Agricultural Economics.	Pune	Indian Society of Agricultural Economics, Bombay, Univ of Pune & the Gokhale Inst. of Politics & Economics.
3rd Week Dec. 80	Nutrition for Trainers of community health workers	Hyderabad	National Institute of Nutrition.
December 1980	29th Annual Conference of the Indian Association of Pathologists & Microbiologists.	Varanasi	Banaras Hindu University.

Date	Title	Venue	Sponsoring Body
December 1980	Crop Insurance	Vallabh Vidyanagar	Indian Society of Agricultural Economics, Bombay & Sardar Patel University.
December 1980	Indian Econometric Conference.	Pune	Gokhale Inst of Politics & Economics.
December 1980	Indian Economic Conference.	Pune	Gokhale Inst of Politics & Economics.

Subject Index

Date	Title	Venue	Sponsoring Body
Agriculture			
4 Dec— 6 Dec. 80	Fertilisers in India in the Eightees.	New Delhi	Fertiliser Assocn. of India
Agricultural Economics			
30 Dec— 1 Jan. 80	40th Annual conference of the Indian Society of Agricultural Economics.	Pune	Indian Soc. of Agrl Economics, Bombay, Univ of Pune & the Gokhale Inst of Politics & Economics, Pune.
December 1980	Crop Insurance.	Vallabh Vidyanagar	Indian Society of Agricultural Economics, Bombay & Sardar Patel University.
Economics & Finance			
December 1980	Indian Econometric Conference.	Pune	Gokhale Inst of Politics and Economics.
December 1980	Indian Economic Conference.	Pune	Gokhale Inst of Politics and Economics.
Education			
27 Dec—31 Dec. 80	54th All India Educational Conferenc.	Kurukshetra	All India Federation of Educational Associations.
Engineering			
8 Dec— 9 Dec. 80	Energy Conservation in Diesel generators.	Calcutta	National Productivity Council.
9 Dec—10 Dec. 80	Tribology in power plants.	Delhi	National Productivity Council.
18 Dec—21 Dec. 80	'GEOTECH-80': a conference on geotechnical engineering.	Bombay	C.S.R.E.
Financial Management			
24 Nov— 5 Dec. 80	Cost Estimating & Pricing.	Bombay	Nat. Inst. of Trng Industrial Engg.
History			
26 Dec—28 Dec. 80	Indian History Congress.	Bombay	Bombay University
Hotel Management			
8 Dec—10 Dec. 80	Tourism & Marketing of Hotel Services in India.	Bombay	National Productivity Council.
Industry & Labour			
2 Dec— 3 Dec. 80	Productivity & Trade Union.	Jaipur	National Productivity Council.
16 Dec—17 Dec. 80	Workers Development.	Jamshedpur	National Productivity Council.
Management			
1 Dec—12 Dec. 80	Managerial Effectiveness.	Bombay	National Institute for Training in Industrial Engineering.
7 Dec—12 Dec. 80	Experience in Management.	Agra	All India Management Association.
8 Dec— 9 Dec. 80	Management of Foreign Technical Collaboraiton in India.	Bombay	All India Management Association, Indian Investment Centre & Bombay Management Association.
16 Dec—18 Dec. 80	Decision Net Work.	New Delhi	National Productivity Council.
19 Dec—20 Dec. 80	8th National Management Convention: Management of Technology—Today & Tomorrow.	New Delhi	All India Management Association.
27 Dec—29 Dec. 80	Workshop on Corporate Energy Policies.	Madras	National Productivity Council.

Date	Title	Venue	Sponsoring Body
Mathematics			
1 Dec-- 5 Dec. 80	IInd Conference of the Indian Society for Theory of Probability and its Applications.	Bombay	Maths Deptt., IIT, Bombay.
4 Dec— 7 Dec. 80	Stochastic Processes and Applications.	Ootacamund	Inst of Mathematical Scs, Madras
Medicine & Public Health			
1 Dec—28 Feb. 81	Human Nutrition.	Hyderabad	National Inst of Nutrition.
18 Dec—21 Dec. 80	Annual Conference of the Neurological Society of India.	Calcutta	Neurological Society of India.
3rd Week Dec. 80	Nutrition for Trainers of Community Health Workers.	Hyderabad	National Institute of Nutrition.
December 1980	29th Annual Conference of the Indian Association of Pathologists & Microbiologists.	Varanasi	Banaras Hindu University.
Oceanography and Water Resources			
15 Dec—16 Dec. 80	National Workshop on Energy from the Sea.	Goa	National Inst of Oceanography.
20 Dec—22 Dec. 80	International Symposium on Water Resources System.	Roorkee	Water Resources Development Training Centre, Univ of Roorkee.
Personnel Management			
16 Dec—17 Dec. 80	Joint Councils—Status Reviews.	Allahabad	National Productivity Council.
22 Dec—23 Dec. 80	Quality Motivation.	Madras	National Productivity Council.
Production Management			
24 Nov—12 Dec. 80	Production Management.	Bombay	National Institute for Training in Industrial Engineering.
1 Dec—12 Dec. 80	Quality Control.	Bombay	National Institute for Training in Industrial Engineering.
Science & Technology			
1 December 1980	Radioanalytical Chemistry.	Bombay	Institute of Science, Bombay.
6 Dec—14 Dec. 80	Prof AB Biswas Memorial Symposium & Annual Convention of Chemists 1980.	Bombay	Chemistry Department, IIT, Bombay.
11 Dec—15 Dec. 80	Nuclear Physics & Solid State Physics Symposium.	Delhi	Deptt of Atomic Energy.
14 Dec—18 Dec. 80	Second Congress of the Federation of Asian & Oceanian Biochemists, and Golden Jubilee Annual Meeting of the Society of Biological Chemists (India)	Bangalore	Society of Biological Chemists.
21 Dec—24 Dec. 80	Workshop on Sound Transmission in Coastal Seas.	Bangalore	Electronics Commission.
21 Dec—11 Jan .80	Winter School in Solid State & Structural Chemistry.	Bangalore	University Grants Commission.
22 Dec—24 Dec. 80	Electron Microscopy.	Vallabh Vidyanagar	Sardar Patel University.
23 Dec—24 Dec. 80	Seminar on 'Fluid Mechanics and Fluid Power.	Bombay	National Society for Fluid Mechanics & Fluid Power.
26 Dec—30 Dec. 80	V High Energy Physics Symposium.	Cochin	Tata Institute of Fundamental Research.
Transport & Communication			
15 Dec—20 Dec. 80	Workshop on Route Planning & Scheduling.	Pune	Central Inst of Road Transport.
Women's Studies			
27 Dec—30 Dec. 80	Annual Conference of the All India Women's Conference.	Amritsar	All India Women's Conference.

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1. **Professor of Livestock Production & Management** : (One) : Essential : (i) Second class B.V.Sc./B.Sc. (An. Sci.)/B.Sc. (Dairying)/B.Sc. (Agri.). (ii) Second class M.Sc. /M.V.Sc. in any branch of Animal Science. (iii) Ph. D. in any branch of Animal Sciences. (iv) Ten years' experience of research/teaching/extension in Livestock Production and Management out of which atleast five years should be as Associate Professor or equivalent rank. **Desirable**: Experience in Management of large Animal Research Establishment.

2. **Professor of Agricultural Business Management** : (One): (i) Second class Bachelor's degree. (ii) Second class Master's degree in Business Management or equivalent P.G. training. (iii) Ph.D. in Business Management, with special reference to Agriculture or Animal Sciences. (iv) Ten years experience of teaching/research/actual work in Business Management in relation to Agril. Development out of which atleast 5 years should be as Associate Professor or equivalent rank.

3. **Professor of Forestry** : (One): Essential: (i) Second class B.Sc./B.Sc. (Ag.)/B. Tech. /B.E. (ii) Second class A.I.F.C. (Associate Indian Forest College)/Master's degree in Forestry or equivalent. (iii) 10 years experience in Forestry, out of which 5 years should be in the rank of Associate Professor or equivalent. **Desirable**: (i) Ph. D. in Forestry. (ii) Experience of Post-graduate teaching and guiding research in Forestry.

4. **Chief Scientist (Bajra)** : (One): Essential: (i) Second class B.Sc. (Agr.)/B.Sc. (ii) Second class M.Sc. (Agr.)/M.Sc. in Plant Breeding/Genetics/Pathology/Agronomy. (iii) Ph. D. in Plant Breeding/Genetics/Pathology/Agronomy. (iv) Ten years experience of research/teaching/extension education in any of the above disciplines, preferably on Bajra Crops out of which atleast 5 years should be as Associate Professor or equivalent rank. **Desirable**: (i) Experience of coordinating inter-disciplinary research projects. (ii) Knowledge of Statistics/Biometrical Genetics.

5. **Associate Professor of Agricultural Meteorology** : (One): Essential: (i) Second class B.Sc./B.Sc. (Ag.) (ii) Second class M.Sc. in Physics/Agricultural Meteorology/Mateorology with training in Agricultural Meteorology. (iii) Ph. D. in Meteorology/Agricultural Meteorology. (iv) Five years experience of Teaching/Research/Extension in Agricultural Meteorology/Climatology.

6. **Associate Professor (Agril. Engineering)**: (One): (i) Second class Bachelor's degree in Agril. Engg. (ii) Second class Master's degree in Agril. Engg. with specialization in Soil & Water Engineering/Process Engineering alongwith five years experience in Soil & Water Engineering/Process Engineering OR Ph. D. in Agril. Engg. with specialization in Soil & Water Engg./Process Engineering with at least 3 years experience in Soil & Water Engineering/Process Engineering.

7. **Sugarcane Chemist** : (One): Essential: (i) Second Class B.Sc. (Agri)/B.Sc. (ii) Second class M. Sc. (Agri.)/M. Sc. in Organic Chemistry/ Biochemistry/ Agri. Chemistry. (iii) Ph. D. in Organic Chemistry/Biochemistry/Agril. Chemistry. (iv) Five years' experience in quality analytical work on Sugarcane. **Desirable**: Experience of organizing and coordinating research work preferably on quality aspects on Sugarcane.

8. **Associate Professor of Rural Sociology** : (One): Essential: (i) Second class B.Sc. (Ag.)/ B.V.Sc. or B.A. (ii) Second class M.A. in Sociology or M.Sc. in Rural Sociology. (iii) Ph. D. in Sociology or Rural Sociology. (iv) Five years' experience of teaching/research/extension. **Desirable**: (i) Knowledge of basic statistical methods. (ii) Experience should be preferably in rural sociology.

9. **Biochemist (Mycotoxins)**: (One): Essential: (i) Second class B.V. Sc. & A.H./B.Sc. (Ani. Sc.)/ B.Sc. (Agri.)/ B.Sc. (ii) Second class Master's degree in Biochemistry/Organic Chemistry/ Physiological Chemistry. (iii) Ph. D. in Biochemistry/Organic Chemistry/ Physiological Chemistry. (iv) Five years experience of research/teaching in the above fields. (v) Experience in isolation and identification/characterization

of mycotoxins. **Desirable**: Training/Experience in modern analytical techniques.

10. **Officer Incharge SAVC Classes** : (One): Essential: (i) Second class B.V. Sc. & A.H. (ii) Atleast 10 years experience in teaching/research/extension. **Desirable** : M.V. Sc. degree in any discipline of Veterinary Science.

11. **Associate Professor of Helminthology** : (One): (i) Second class B.V. Sc. & A.H. (ii) Second class M.V. Sc. in Parasitology with specialization in Helminthology. (iii) Ph. D. in Veteriary Parasitology with specialization in Helminthology. (iv) At laeast five years experience of teaching/research/extension in Vety. Parasitology/Helminthology.

12. **Research Officer (Biochemistry)**: (One): (i) Second class B.Sc./B.Sc. (Agr.). (ii) Second class M.Sc./M.Sc. (Ag.) in Biochemistry/Agril. Chemistry. (iii) Ph.D. in Biochemistry/Agril. Chemistry. (iv) Five years' experience in the quality analysis work on field crops. **Desirable**: Research experience in quality aspects on rapeseed and mustard.

13. **Scientist (Foods & Nutrition)**: (One): Essential: (i) Second class B.Sc. (Home Science)/B.Sc. (Ag.)/ B.Sc. (ii) Second class M.Sc. in Foods and Nutrition/Biochemistry. (iii) Ph. D. in Foods and Nutrition/Biochemistry with specialization in Nutrition. (iv) Five years experience of teaching/research extension in Foods & Nutrition/Nutritional Biochemistry, preferably in Foods & Nutrition. **Desirable**: Training experience in modern analytical techniques.

14. **Associate Professor (Biochemistry)**: (One): (i) Second class B.Sc. (Agr.) B.V.Sc./ B.Sc. (ii) Second class M.Sc. in Biochemistry. (iii) Ph. D. in Biochemistry. (iv) Five years experience in research teaching in Biochemistry.

15. **Microbiologist** : (One): (i) Second class B.Sc. or B.Sc. (Agri.). (ii) Second class M.Sc. in Microbiology/Biochemistry/Agri. Chemistry of Allied field. (iii) Ph.D. with specialisation in Microbiology. (iv) Five years research experience in any of the above fields.

16. **Agricultural Communication Specialist** : (One): Essential: (i) Second class B.Sc. (Agri.)/B.V. Sc. & A.H./ B.Sc. (An. Sc.)/B.Sc. (Home Sc.). (ii) Second class M.Sc. in Extension Education/Agril. Extension/Agril. Communication (iii) Ph. D. in Extension Education/Agricultural Extension/Agril. Communication (iv) Five years experience of teaching/research/extension in Extension Education preferably in Agricultural Communication. **Desirable**: (i) Training in Agronomy and Rural Sociology. (ii) Rural background

17. **Nematologist**: (One): Second class B.Sc. (Agri.) or B.Sc. (ii) Second class M.Sc. in Plant Nematology or Zoology/Entomology/Plant Pathology with specialization in Nematology. (iii) Ph. D. in Plant Nematology or Zoology/Entomology/Plant Pathology with specialization in Nematology. (iv) **Five years experience** of **Research**/Teaching/Extension on Plant-Parasitic nematodes.

Note

1. One or more qualifications relaxable in case of candidates found otherwise outstanding.
2. Special weightage will be given to extension experience possessed by the candidates for posts in disciplines amenable to extension.
3. Number of posts mentioned against each post is likely to vary.

Pay Scales

Sr. No. of post	Pay scale	Total emoluments at the initial of the pay scale (exclusive of House Rent)
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1. **Professor of Botany** : (One) : Essential : i) Second class B.Sc. (Agri)/ B.Sc. with Botany. ii) Second class M.Sc. in Botany. iii) Ph.D. in Botany. iv) At least ten years experience of teaching/research/extension in Botany out of which atleast five years should have been as Associate Professor or equivalent with evidence of having conducted independent research and published papers in scientific journals of repute. Desirable : i) Capacity for organisation as Head of the Section/Department in a research/teaching institute. ii) Advanced training in any field of Botany.

2. **Professor of Animal Breeding** : (One) : Essential : i) Second class B.V. Sc. & A.H./B.Sc. (Ani. Sc.)/B.Sc. (Agri.)/B.Sc. (Dairying). ii) Second class Master's degree with specializati in Animal Breeding. iii) Ph.D. Animal Breeding/Animal Genetics. i Ten years experience of teaching/r search/extension in Animal Breedin Animal Genetics and evidence of havin conducted independent research in far animal breeding in the form of publis ed work in scientific journals of reput Desirable : i) Training in Biologic Statistics.

3. **Chief Scientist (Animal Breeding)** (One) : Essential : i) Second clas B.V.Sc. & A.H./B.Sc. (Ani. Sc.)/B.Sc (Dairying)/B.Sc. (Agri.) ii) Second clas Master's degree with specialisatio in Animal Breeding. iii) Ph.D. i Animal Breeding/Animal Genetics. iv Ten years experience of teaching/re search/extension in Animal Breeding Animal Genetics and evidence of having conducted independent research i cattle breeding in the form of publishe work in scientific journals of repute.

4. **Director Students Welfare**: (One) Essential : i) A good second class Master's degree in Arts, Science, Agriculture or Veterinary Science. ii) Atleast ten years experience of teaching in a college in a responsible position and evidence of having engaged himself in extra-curricular activities. iii) Wide experience of students' problems and capacity to understand them and win students' confidence, Good personality. iv) Administrative ability and capacity to work in a team and for instilling in students a sense of pride in institutional traditions. OR Retired Army/Navy/Air Force Officer being at least graduate and of the rank not below that of a full Colonel. Desirable : i) Training and experience in organising sports. ii) Age preferably between 40 to 50 years. (Note : Those who had earlier applied, need not apply again).

5. **Associate Professor-Cum-Coordinator** : (One) : Essential : i) Second class B.V.Sc. & A.H./B.Sc. (An. Sc.)/ B.Sc. Ag.)/(B.Sc,(Dairying). ii) Second class M.Sc./M.V. Sc. in any branch of Animal Science. iii) Ph.D. in any branch of Animal Science. iv) Five years experience of teaching/research/extension. Desirable : Experience in management of different farm animals.

6. **Economic Botanist (Cotton)** : (One): Essential i) Second class B.Sc./B.Sc. (Ag.). ii) Second class M,Sc./MSc. (Ag.) in Plant Breeding/Genetics. iii) Ph.D. in Plant Breeding/Genetics. iv) Five years experience of teaching/research in Breeding and Genetics preferably on cotton as evidenced by published work in scientific journals of repute. Desirable : Training in Statistics with special reference to design of field experiments.

7. **Associate Professor of Hindi and Haryanvi Culture**: (One): Essential: i) Second class B.A. with Hindi. ii) Second class M.A. in Hindi. iii) Ph.D. in Hindi. iv) Five years teaching/research/extension experience in Hindi language or promotion of Haryanvi culture. Desirable: i) Sound knowledge of Sanskrit, Haryanvi folklore and culture. ii) Publications in Hindi or Haryanvi culture.

(*Contd. on page 664*)

THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

SOCIAL SCIENCES

sychology

1. Gill, Surinder Kaur. Effect of personality and cortical timulants and depressants on perceptual, psychomotor and igilance tasks. Panjab University.
2. Kishwar Ahmed. A study of the closed mind in relation o authoritarianism, conservatism and rigidity and familial ntecedent within the Indian context. Panjab University.
3. Prem Kumar, R. Sweety. A study of motivational and ersonality factors influencing consumers' buying behaviour. M.S. University of Baroda.

Sociology

1. Pandya, N.B. Changing patterns of Padhar's life in Gujarat. Saurashtra University.
2. Tayal, Satyabala. A sociological study of the educated scheduled caste women of Vidarbha. Nagpur University.
3. Verma, Manjula. Socio-economic condition of female nurses in civil and railway hospitals of Gorakhpur. University of Gorakhpur.

Political Science

1. Dubolia, Narender Kumar. An analytical study of All India National Congress with a special reference to Gwalior Division. Jiwaji University.
2. Padhy, Drushna Singh. Political corruption and the Khanna Commission of inquiry in Orissa: A case study. Berhampur University.

Economics

1. Chaliha, Jyoti Prasad. Pattern of land holdings and problems of investment in agriculture in Assam: A case study in Dibrugarh District. Gauhati University.
2. Karunakaran Pillai, G. Local finance in Kerala. University of Kerala.
3. Lahiri, Chandidas. Agricultural enterprise in North Bengal: A study in farm economy in Jalpaiguri, 1973-75. North Bengal University.
4. Mohan, P.S. Technological diffusion in Madras agriculture. University of Madras.
5. Murukadas, C. A study of the effects of population growth on income, investment and consumption in India during 1951-1971. University of Madras.
6. Panda, Prahallad. Financial aspects of development of Indian Railways since independence. Berhampur University.
7. Pathak, Jivendra Kumar. Madhya Pradesh ke árthik vikas mein rajkoshiya samadhanon ka sangrahan. 1957-58 se 1977-78 tak. University of Saugar.
8. Shrivastava, Vinita. Shram kalyan evam utpadan protsahan—J.C. Mills. Jiwaji University.

Law

1. Sankurathripati, Rama Rao. Resource-management in the international sea-bed area. Jawaharlal Nehru University.

Public Administration

1. Mantramurthi, Alexander. A study of the functioning of the traditional and statutory Panchayat Systems in the Nilgiris, Tamil Nadu. University of Madras.

Education

1. Dahake, Wasudeo Govindrao. Study of inspection and supervision practices in relation to the changes in educational system. Nagpur University.
2. Deshmukh, Martandrao Narayanrao. An analytical study of some scholastic conditions and practices as contributory factors to creative ability. Nagpur University.
3. Goyal, Geeta Jagannath. A study of teachers' problems, attitudes and output related to the research in agricultural universities in India. M.S. University of Baroda.
4. Joshi, Anilchandra Suryaram. Standardization of the proficiency test in second language (Hindi) for senior primary school teachers of Gujarat State. Sardar Patel University.
5. Landage, Chandrakant Narayan. History and survey of education in Solapur District. Shivaji University.
6. Medhi, Sacchidananda. An investigation into the problem-causes of stagnation and wastage among the pupils of secondary school, Assam, with special reference to Kamrup District and remedial measures thereof. Gauhati University.
7. Reddiah, Koneni, Adinarayana. A teaching strategy for developing appropriate skills required in students for conducting scientific investigation. M.S. University of Baroda.
8. Singh, Satvir Pitam. A study of preparatory science examination of the M.S. University of Baroda for the year 1974-75. M.S. University of Baroda.
9. Somasundaran, M. A comparative study of certain personality variables related to over, normal, and under-achievement in secondary school mathematics. University of Calicut.
10. Suryanarayana Sastry, Duvvury. A study of the class room behaviour of teachers in relation to their philosophic beliefs in education. Andhra University.
11. Upadhyaya, Indravadan Jagjivandas. Standardization of the proficiency test in first language for primary school teachers of Gujarat State. Sardar Patel University.

Commerce

1. Chauhan, Arvind Singh. Hoshangabad sambhag mein krishi kee sansthagat vitt vyavastha. University of Saugar.
2. Gangadhar, V. Financial trends in the Indian corporate sector. Kakatiya University.
3. Pathak, Bhabendra Nath. Road transport in the North Eastern Region of India, 1951-1976. Gauhati University.

HUMANITIES

Philosophy

1. Gautam, Satya Paul. A study of some problems of explanation of human actions. Panjab University.
2. Tripathi, Yogendra Kumar. Nyaysutra evam Charaksanhita kee sambadh samagri ka darshnik evam ayurvaigyanik adhyayan. University of Jabalpur.

Linguistics

1. Bhagwat, Geeta Subhash. Prashasnik Marathi bhashecha vikas. Nagpur University.

Literature

1. Ahmad Kutty. Life of Prophet Muhammad as depicted in his contemporary poetry. University of Calicut.

English

1. Chaudhari, Tara Bhojraj. Concept of tragedy in Herman Melville. Nagpur University.
2. Kasture, Padmaja Shrinivas. A study of the influence of Emerson on Emily Dickinson's poetry with reference to themes and techniques. Nagpur University.

3. Niruparani, Kandula. Feminine sensibility in the novels of Ruth Prawer Jhabvala. Andhra University.

French

1. Edourard, Mannar Jean. Le role de la modulation et de l' Adaptation en traduction. Jawaharlal Nehru University.

Sanskrit

1. Jain Narendra Pal. Udbhat ke kavyalanker Sar Sangraha ka samikshatamak adhyayan. Sardar Patel University.

2. Kaushik, Leela Singh. Naishadh mahakavya mein alankaron kee samiksha. University of Gorakhpur.

3. Khare, Lata Rani. Mahakavi Subandhu ka kavitv. Kanpur University.

4. Tripathi, Banarsi. Rigvediya Sayan Bhashya ke sandarbh mein Vedic subant vyuptiyon ka tulanatmak adhyayan. University of Gorakhpur.

Hindi

1. Ahire, Waman Vana. Swatantryottar Hindi upanyason mein rajnitik chetna: Ek sarvekshan, 1947-74. M.S. University of Baroda.

2. Bahuguna, Sharad Chandra. Adhunik kahani mein maniviya samvedna ke vividh swarup aur unka vikas, 1936 se 1972 tak. Panjab University.

3. Chawla, Surjeet Singh. Guru Nanak: Sadhna aur sahitya. University of Saugar.

4. Chawla, Veena. Nai kavita kee manovaigyanik pristhbhoomi. University of Rajasthan.

5. Dayal, Ratna. Nai kavita ke kaviyon ke kavya siddhanton per pashchatya prabhav. University of Indore.

6. Jain, Pratibha. Gandhian social and political thought as reflected in Hindi fiction, 1919-1948. University of Rajasthan.

7. Jain, Premlata. Rasprakriya aur Hindi kee nai kavita 1943 se 1970 tak. University of Indore.

8. Joshi, Asha. Chhayavad-chatustayitar chhayavadi kaviyon ka kavya. University of Delhi.

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Applications are invited for the post of (1) Md. Iqbal Professor of Urdu in the Department of Modern Indian Languages (2) Professor of Economics, Department of Economics—2 posts in the grade of Rs. 1500-60-1800-100-2000-125/2-2500. A higher initial salary within the grade may be given to exceptionally qualified persons.

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Provided that if the selecting authority is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of the qualifications prescribed in (b) above.

Explanation — consistently good academic record means over all record of all assessments throughout the academic career leading to the Master's degree which should at least be B+ or high second class.

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P.K. Mukerjee
REGISTRAR

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

Notification No. 14

Applications are invited for the following posts in prescribed forms which will be available upto 8th December, 1980 alongwith the details of qualifications and Specialization from the undersigned on pre-payment of Rs 2.00 (Re. 00.50 paise for members of Scheduled Castes/Scheduled Tribes) by Crossed Indian Postal Order payable to Registrar, M.S. University of Baroda alongwith a self-addressed envelope of 30 cms. x 12 cms. for each post.

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K.A. Amin
REGISTRAR

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Qualifications

A first class Master's Degree of an Indian University or equivalent qualification of a foreign University in the subject concerned and two years approved research or teaching experience in a college or University

Or

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The last date for receipt of application is **20-12-1980**.

C.K. Devassy
REGISTRAR

SOUTH GUJARAT UNIVERSITY

University Campus Udhna Magdalla
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Applications are invited in the prescribed form (in eight copies) for Professorship attached to the State Bank of India Chair in Rural Development instituted in the Department of Rural Studies of the University. Eminent Scholars who have won recognition and have to their credit published work of high merit and who are actively engaged in research in the field of Rural Development will be considered for this position.

Subject to the terms of Contracts the tenure of initial appointment will be for a period of five years. The appointment can be renewed for a further period as may be decided by the University. This will be basically a Research responsibility and the incumbent will be expected to supervise, conduct and guide research and publish research findings. He may be ocassionally required to participate in post-graduate teaching and conduct Seminars. He will also be required to deliver an annual public lecture on any topic related to Rural Development. The post will be in the grade of Rs. 2500-100-3000. In addition to above basic salary benefits like Dearness Allowance, House Rent Allowance and Contributory Provident Fund will also be available for this post. Since this is a term appointment benefits of Gratuity is not attached to this post.

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The last date for receipt of applications will be **20-12-1980**.

G.A Desai
REGISTRAR

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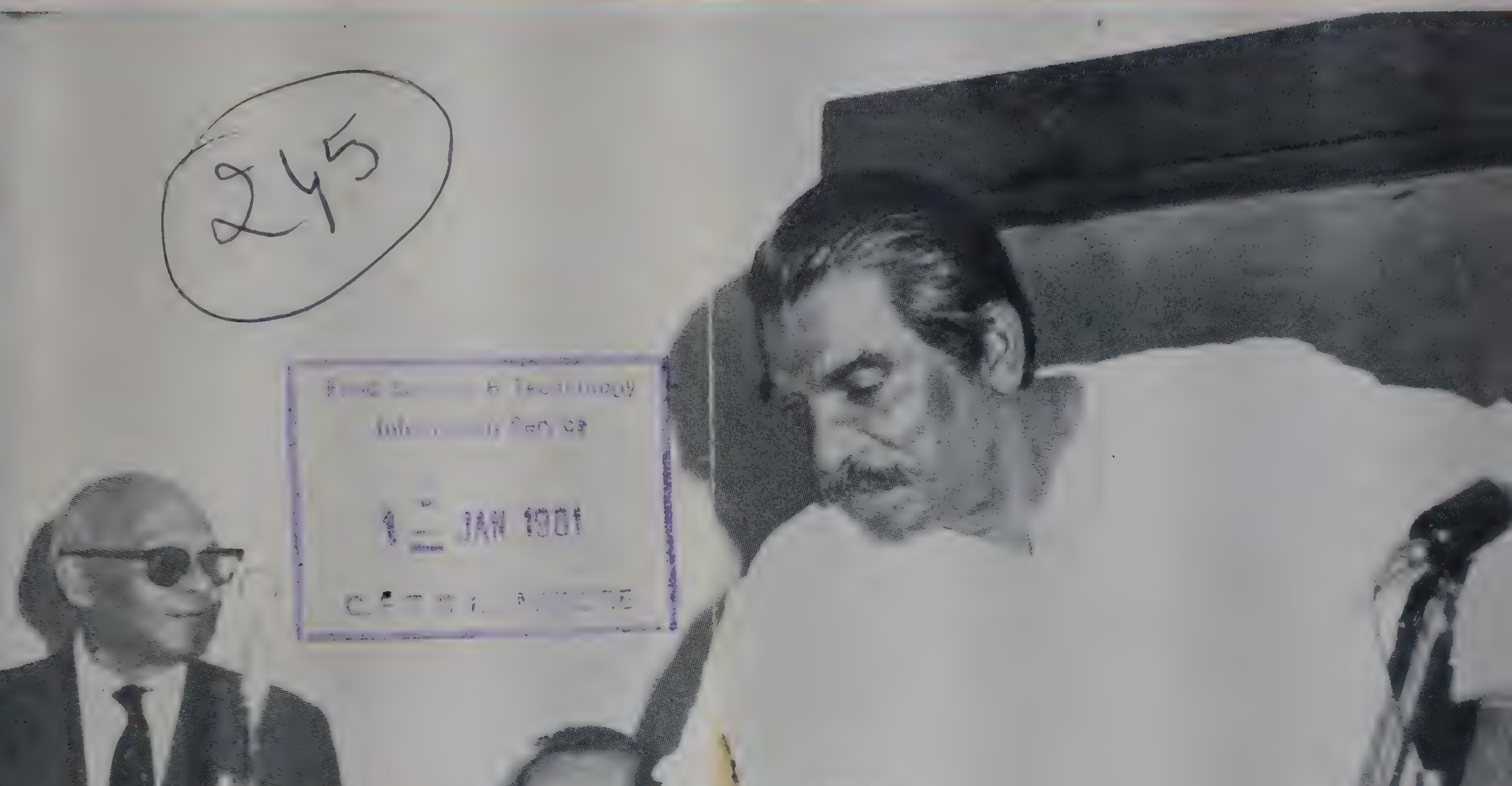

Mr. Baby John, Education Minister of Kerala, inaugurating the Ship Technology Department building at the Cochin University. Dr. M.V. Pylee, Vice-Chancellor, looks on.

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Editor: ANJNI KUMAR

Development of Higher Education in the Sixth Plan

The Approach Paper for Development of Higher Education, for the next Five-Year Plan period outlines the basic philosophy and strategies for development of universities and colleges with a view to fulfilling the statutory obligation of the UGC for improvement of standards of higher education and research in the university system and keeping in view the suggestions contained in the UGC paper "Development of Higher Education in India—A Policy Frame". *The main focus of this approach paper is on improvement of quality of university education and making extension an integral part of the activities of universities and colleges. Expansion of educational facilities, both by way of opening new universities, new university centres for post-graduate studies, new departments and new colleges would have very low priority.*

With a view to creating the essential basic conditions for proper development of higher education, the objective of the new policy is to reduce pressures on the university system by exercising restraint in establishment of new institutions, selective admissions to full-time institutions of higher education on the basis of merit, reservation of seats for weaker sections of society and providing channels of non-formal education. The improvement of quality of higher education and restructuring of courses of study at the undergraduate stage with the aim of making them more relevant is one of the main planks of reform of higher education. It is essential that the university teaching departments themselves satisfy the norms as viable units of teaching and research. If the university system is to discharge adequately its responsibilities to the entire educational system and to the society as a whole, it must assume extension as the third important responsibility and give it the same status as teaching and research.

Extension might include educational extension work, adult education and community extension work. With the objective of the maintenance of adequate and proper standards in institutions of higher education and research, it is the responsibility of the UGC to strive to provide necessary guidance to the educational system and to assist it in bringing about the needed transformation.

Financial resources

The resources likely to be available for higher education in the next five years would be utilised to promote: (a) growth and development of universities and colleges to make them functional at an optimal level, strengthen their academic teaching and research activities, and initiate programmes of extension and interaction with the community, and (b) improvement of quality through special programmes and support for research and to develop major thrust areas in chosen discipline. During the Fifth Plan, the resources available were to be utilised in the ratio of 2:1 for

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development of universities and colleges; and quality improvement programmes and research. Similarly the ratio of expenditure between the university sector and colleges sector was to be approximately in the ratio of 2:1. Based upon the implementation of the programmes and the dynamism which each of these sectors have so far demonstrated, necessary adjustments would need to be made in the next plan for expenditure in each of these sectors within the overall resources.

UNIVERSITY SECTOR

The basic philosophy adopted in the approach paper is that the universities represent a wide spectrum with respect to their age, present stage of growth and development, strengths and weaknesses; goals and objectives; financial and human resources and inputs; as well as managerial capabilities to discharge their functions effectively and the concern of the State Governments. The development assistance to the universities should, therefore, be related to these factors keeping in view the limits to growth in size, the need for qualitative improvement and development of viable schools of teaching and research in the selected areas and to remove regional imbalances in the development of facilities for higher educatiln in the country. This paper, therefore, makes an effort to distinguish well developed universities/departments from the rest and define different and appropriate strategies for UGC support to the universities/departments representing different levels of growth, development and capabilities.

The UGC subject panels would prepare individual subject department profiles indicating needs of attainment of certain optimal and critical size with regard to infrastructure facilities, faculty strength supporting technical staff, student enrolment at different levels, nature of academic teaching and research activities and output. *Subject to these individual departmental profiles, the universities could be grouped under three categories* :

(i) *Well Developed Universities* : Universities which have 60% or more of their departments with infrastsucture facilities, staff strength, research effort and teaching programmes *above* a certain critical level, beyond the optimal growth stage (It is estimated 1/5 of universities are in this group).

(ii) *Developing Universities* : Universities which have most of their departments (60% or more) in the still developing stage even to reach an optimal level of facilities and activities (It is estimated that about 3/5 of universities are in this group).

(iii) *Universities which have the potential to reach well developed stage in next five years* : These are universities which are intermediate between (i) and (ii) above, and which have nearly 60% of their departments developed to a near optimal level and can be enabled to move from developing to developed sector, with critical inputs and guidance in next five years. (It is estimated that balance 1/5 universities have such clusters of departments.

Well developed universities/departments

On the basis of the individual subject departmen profiles formulated by the different subject panels, would be possible to identify in each subject, *university departments which have reached a certain optima and critical size with regard to infrastructure facilities faculty strength, supporting technical staff, studen enrolment at different levels, nature of academi teaching and research activities and output.* Based on such departmental profiles, it would be possible to identify universities *with more than 60% of the total number of departments in the well developed category.* It is estimated that nearly 20% of the university departments in various subjects and overall also about 20% of universities would belong to this group of institutions.

In the case of such well developed universities, the University Grants Commission would adopt a policy of minimising developmental support of a general nature. On the other hand, such universities and their departments would receive essential and substantial support on the basis of importance and value of their academic programmes of teaching and research.

The need for senior positions would be examined carefully on the basis of new thrust areas proposed or needed by the departments or new positions that may be created in case they qualify for support under programmes, such as, special assistance to selected departments/centres of advanced study etc., or by undertaking university leadership programmes or other activities of qualitative improvement in the subjects. Efforts will be made to institute a personal/merit promotion scheme.

Efforts would be made to coordinate and integrate the plan and non-plan resources and to provide for an adequate maintenance grant in consultation with the State Governments.

Introduction of new specialisation could be made by re-deployment of existing faculty positions which may fall vacant, as well as by use of other positions which may become available as part of time-bound programmes of restructuring etc.

The need of building up sophistication levels of infrastructure facilities would be integrated with the quality improvement programme, reseasch support and any other specific project assistance, which would be both time-bound and involve academic accountability.

Developing universities/departments

Universities/departments which are still in the developing stage would require normal developmental support for purposes of building up their infrastructure facilities strengthening of staff etc., to reach a certain optimal or desirable level of functioning and maintenance of proper standards. Nearly 60% of departments and the universities would belong to this group. Specific norms for this purpose would be laid down espect of departments in relation to their ongoing ivities of teaching and research and *some gui- ice would be provided for utilising the Plan develop- nt grants to help in bringing up their facilities to optimal level.*

Besides general developmental support, depart- ents on basis of merit/evaluation *would be quali- d to receive research project support as well as ecial programmes*, such as university leadership ogrammes, departmental research support etc.

A new feature of the approach paper relates to the tensive development of selected universities or clus- rs of departments in different regions and would volve departments which can be enabled to move om developing to developed sector within reasonable me and with critical inputs in the next five years.

The time schedules of beginning such intensive evelopment in about 15 universities over a five-year lan period would be drawn up in advance and the niversities concerned requested to make adequate reparations for initiating such intensive development.

Such intensive development could be initiated on continuous basis annually in two or three universi- ies.

Selection of such universities or groups of de- partments would be done on well established criteria and departmental profiles and jointly in consultation with the State Governments.

Each of these universities would thus be enabled to have at the end of the five-year period a certain number of their departments functioning at an optimal level and, therefore, capable of moving in the direction of developing major thrust areas in selected subjects and acquire the capabilities for participation in special programmes and quality improvement schemes.

Nearly 20% of the departments and the universities would belong to this category. With their development on an intensive basis, the overall level of institutions functioning at an optimal level would go up to 40% by the end of the next five years.

Opening of new departments and new areas of specialisations

In the case of well-developed universities, opening of new specialisations would be mainly for the purpose of inter-disciplinary integration based upon inter-departmental collaboration or in newly emerging areas which could be largely sustained by existing facilities within the university.

In the case of other universities, opening of new departments would be conditioned by overall needs for such departments within the State or region as a whole and conforming to specific norms.

Any efforts to open new departments of study with sub-viable level inputs and inadequate preparation would be discouraged.

New universities/university postgraduate centres/ academic clusters

The general policy so far followed during the Fifth Plan period would be pursued, keeping in view the need for correcting regional imbalances as also the prime need for full support required by the existing universities.

Opening of new university centres for postgraduate studies would be minimal and only in exceptional cases of justified need within the region. The scheme could be reviewed with a view to regulating development of postgraduate facilities in a co-ordinated manner in different regions of the country.

Special efforts would be made to build up academic clusters of groups of colleges pooling their resources for purposes of developing standards of undergraduate education as well as to initiate in a coordinated manner, postgraduate courses of relevance to the region concerned.

Strengthening of administrative and planning infrastructure of universities

The visiting committees which assessed the Fifth Plan development requirements of various universities observed that in many a case the faculty was not involved in the formulation of the development proposals of departments in the universities. It was emphasised that *for the proper implementation of various development programmes the involvement of the faculty is an essential desiradatum.* Each university should have a planing and evaluation board for the efficient implementation of various programmes.

Special efforts would be made to help universities to effectively implement the various plan programmes approved by UGC by strengthening the administrative and planning infrastucture in the universities. Each university may set up an academic planning board to look after the functions of perspective planning as well as implementation of plan development schemes, to bring about necessary academic reforms in courses of study, examinations and to take a comprehensive view of the research activities.

Annual review of progress would be resorted to and any scheme not initiated within the prescribed time, would be reviewed before it is renewed.

A few universities may be selected to undertake case studies on the problems of administrative support required for implementing various developmental plans of the universities/departments.

Student amenities

Our nation's greatest natural resource is the boundless energy and enthusiasm of our students joined to the wide variety of talents which these young people possess. Although higher education rightly concentrates on the training of the mind and on the intelligent application of skills required by serious study, it is the "whole man" that must be taken care of. From this point of view, it becomes essential that care is taken to ensure :

(a) that all good institutions have playing fields, gymnasia and other facilities for vigorous bodily exercise;

(b) that cultural activities of every sort are stimulated among the students of this land whose music, theatre, art and dance are today the focus of much international interest;

(c) that suitable material amenities are made available to students to permit the type of austere comfort which allows young people to concentrate on higher educational goals. The ongoing schemes include the following :

(i) Book Banks
(ii) Health Centres
(iii) Playfields
(iv) Sports and Games
(v) Cultural Activities
(vi) Student Mobility Scholarships for National Integration
(vii) Students Aid Fund
(viii) Field Work Facilities
(ix) Studentships for Special Courses
(x) Career Guidance and Information Bureaux.

Each of these programmes would be reviewed and reoriented wherever necessary, and implemented during the next Plan period also, to the extent the overall resources position would permit.

The programmes covered under student amenities/welfare may be reviewed and reoriented wherever necessary. State Governments may also mobilise resources to provide for bursaries, hostel seats, play fields, health centres etc., particularly to ensure access to higher education for students from weaker sections, and possibly by minimising on setting up of new colleges.

Faculty improvement and teacher amenities

Programmes which have a beneficial impact on teachers would include a variety of training programmmes under the Faculty Improvement Programme which would help upgrade their competence as teachers and, therefore, aid in maintenance and improvement of standards.

A large number of summer institutes, refresher courses, short-term courses, ULP type of activities would be continued on the advice of the subject planels.

The Faculty Improvement Programmes of enabling teachers to acquire academic qualifications such as M. Phil. and Ph.D. would be required to draw up its Plan well in advance over a five-year period so that the participating teachers could make necessary arrangements to proceed for such a training. Career awards, national associateships, national fellowships and national lectures programmes would be further strengthened.

The scheme of utilisation of services of retired teachers would be reviewed and taken up for implementation depending upon its beneficial impact.

Residences for students and staff

Every effort would be made to the extent resources permit, to provide more residences for students and staff by way of hostels, staff quarters and faculty facilities complexes so as to help in mobility of academic community for various academic programmes. provement of existing hostels would also be taken

International collaboration and joint research programmes

Opportunities of the university system to inte with International programmes, scientists and sc lars in other countries would be continued by wa participation in International conferences, semi symposia as well as training programmes of sp alised nature.

The existing channels of bilateral arrangem and cultural exchange programmes would be stre thened in areas of importance.

Assistance from international agencies, such the UNDP/UNESCO would be channelised specific programmes to derive the maximum ben

Joint-research projects of mutual interest and w national norms would be encouraged to be taken

Special programmes and support for research

The present policy of inviting departments to part pate in various quality improvement programmes wo be continued. The selection would be made on the ba of comparative evaluation of the departments conce ed and on the advice of the subject panels and Standing Committees constituted for such progra mes.

Programmes such as the Centres of Advanc Study, Special Assistance to Selected Departme and Support for Major Departmental Research wou largely be in the university departments but any c lege department which fulfils the required crite could also be invited to participate in such spec programmes.

Programmes for qualitative improvement of U dergraduate education, viz., the College Scien Improvement Programme (COSIP) and the Colle Humanities and Social Sciences Improvement Pr gramme (COHSSIP) would be considerably stren thened and expanded in the light of the experien gained during the Fifth Plan period. The manner implementing these programmes in individual colleg as well as under the University Leadership Programn would be kept flexible to meet specific situations a keeping in view the recommendations made by t Standing Committee for the College Science In provement Programme. Special emphasis would given to production of reading material, teaching ai demonstration aids and equipment for laborato instruction. Inter-university and inter-regional pr grammes of the ULP type would be initiated so th the network for qualitative improvement of unde graduate education could be strengthened with ad quate number of effectively functioning units loci. *The monitoring of these programmes would made effective through State-level and regional commi tees involving participants from universities and co eges. The benefits of these programmes would large accrue to the college sector.*

Support for strengthening of university researc and increasing their participation in the total nation *research and developmental effort would be considerably increased:. The main components of* such a programme in the next five years would include the following :

(a) Individual (Major/Minor) Group, Departmental, Inter-departmental, Inter-institutional and Socially relevant action research.

(b) Opportunities for teachers to work in other institutions for short periods;
    National Associates;
    Career Awards.

(c) Opportunities for full time research effort.
    National Fellowships/National Lectureships
    Visiting Appointments
    Research Associateships
    Research Fellowships (Sr./Jr.)

(d) Interaction with other R & D institutions/industry.

(e) Creation of central/regional facilities—Instrumentation, Computers, and Libraries.

Extension activities

As indicated in the approach paper, *the universities would be required to discharge adequately their responsibilities not only in the area of teaching and research but also by taking up extension work and accepting certain responsibilities for the entire educational system and to the communities around them.*

Extension should be made an integral part of the university culture and accepted by all and may assume a variety of programmes and activities most suited to different university situations. Such extension activities may be either in the nature of interaction with all levels of the educational system—primary and secondary education in schools or adult education and non-formal education programmes including use of mass media and educational technology, science education centres for creative work by all sections of society, and action-oriented research programmes for solving local problems.

On the other hand, it may involve closer interaction with the society in programmes of integrated rural development. inculcation of scientific temper and awareness of impact of science in everyday life and proper utilisation of products of science and technology, extension lectures etc.

It could also include well-defined efforts towards production of books, reading material, and other activities of production of material for formal and non-formal/adult education programmes by utilising the infrastructure of the universities and colleges and interacting with local voluntary organisations, industries etc.

Within the university system also, a number of ULP type of activities could be initiated for establishing continuous channels of communication and concern with colleges affiliated to it and schools in the region.

Acceptance of extension as a part of the overall university culture would require recognition of these activities as contributing to the total workload of the teachers and also should not involve any additional payment specifically for such extension activities.

On the basis of the above programmes, suitable guidelines would be drawn up for universities to undertake objective self-studies and formulate suitable proposals for development and qualitative improvement in the next five years. A specific schedule/time table would be laid down for sending the guidelines, preparation and forwarding of plan proposals and finally for visits by the Visiting Committees for examination of the proposals.

The above implies the creation of and/or strengthening of the planning capability and also of the implementation machinery at the institutional level, in colleges and universities and also at State Government level.

Effective state level planning machinery for Higher Education may have to be provided through legislation. The State Government should clearly indicate resources available for higher education in any plan and through this machinery define how they will be used to support existing universities and colleges in relation to their approved programmes of development and what funds, if any, would be left for setting up new universities or colleges.

The University Grants Commission would consider having field officers working in different regions for purposes of establishing a continuous dialogue on academic problem with the institutions and to disseminate information and to interact with the universities and colleges more closely besides providing feedback to the University Grants Commission so that it may develop and re-orient its programmes in relation to emerging needs of higher education in different regions.

[To be concluded]

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Students Role in National Adult Education Programme

Gh. Mohi-ud-din-Malik*

Illiteracy is the biggest barrier in the progress of any country and in the implementation of any kind of social reform at any level. Illiteracy is maximum in those sections of the society which are also economically backward. Efforts are made in all countries of the world to keep the masses literate. A large number of agencies are carrying out the programme of adult education in different parts of the world, more particularly in the developing nations. An educated, healthy and productive population is a vital economic asset for the nation and as such eradication of illiteracy is essential for national development.

Youth has a special role to play as agents of change, adoptation and growth in society. Many progressive ideas are embodied in our constitution but the society is still far from accepting these ideas completely. This cannot be done merely by enforcement. The University students have a special responsibility in this respect because the country spends much more on them than what she gets in return. Until a few decades ago the role of the University was limited to preservation and transmission of knowledge and extension of the boundaries of knowledge through research, investigation and inquiry. It is now increasingly realised that universities have to play an active role in carrying knowledge to the community and to accept this service as one of their important responsibilities.

The basic principle involved in adult education is that education is a key-factor in sound-economic growth and development. It is also important to realise that in carrying knowledge to the coummunity around, a university not only benefits the community through its intellectual leadership but is also able to restructure its own courses of study and make them more relevant to the needs of the community.

The students and the teaching community of the university should break the academic barriers and come out of the cloistered ivory tower to justify the existence of the universities in the present socialistic pattern of society. It is an admitted fact that government alone cannot eradicate illiteracy from the country because of the huge funds required for the stereotyped government managed institution—big or small. Utilisation of the free service of the vast numbers of university and Hr. Secondary School students for teaching illiterates to read and write seems to be the only plausible arrangement for achieving time bound targets.

The undergraduate students of the colleges, either as a part of NSS, which may have modified or in any other appropriate manner, may prove to be valuable in organising adult education. The students at this level have the time and opportunity to involve directly in teaching adults either during their long vacation or after college hours. For this purpose it would be necessary to involve the teachers of these institutions also and re-think about the present timing of academic sessions, the system credits, certification etc. The students can undertake the responsibility to teach adults in their vicinity because they can prove best as they know the illiterates personally and can treat them accordingly. Lack of motivation and ignorance of educational benefits among illiterate adults is a great threat to the NAEP. This challenge can be easily met by the students community in organising camps at different places, arranging dramas, lectures etc. in order to motivate and attract illiterate adults towards educational benefits.

The NAEP cannot prove success unless the education provided to the adults is relevant to the learners needs. Therefore, we need to prepare literature in accordance with the needs and requirements of the adults. University students can play an important role in this regard. It is important to make arrangements for applied and coordinated research so that the experience of NAEP is systematically analysed to provide guidelines for further action. Most of the postgraduate departments in the University as Education, Economic, Sociology, Biology, Political Science etc. can render a great service and assistance in NAEP. The students of education can conduct surveys of the local illiterate adults and can identify the illiterates. Students of economics can be imvolved in economic survey in their neighbourhood. Students of sociology can make social survey or study the ethnic and cultural aspects of the remedy of the communities nearly. The students of Botany can teach about plants, orchards and about the remedy of plants, orchards and about the remedy of plant diseases like "Scab" which is commonly found in Kashmir at present. The students of Zoology can teach about the animal kingdom as how farmers can increase milk etc. and earn a lot. The students of Political Science can render a great service in making people aware about their rights and duties. Likewise the other post-graduate departments as History, Physics, Chemistry etc. can prove very much helpful in NAEP.

The success of NAEP will be determined by the extent to which youth and students can be motivated to commit themselves to this programme.

Students usually have idealism and spirit of service; and they should get an opportunity to apply their idealism and spirit of service for the service of the community. Let us create an atmosphere in which students find this work worthwhile and satisfying. □

Faculty of Education, Kashmir University.

University Autonomy —A Jaded Concept

Sukumar Azhicode

Most of the writers on education in England are frankly appreciative of the long tradition of freedom cherished by the British universities. “Our universities are outstanding examples of our belief in academic freedom.” says Prof. Lester Smith. The core of British thought and culture has been always interposed with the idea of the freedom of the individual. More than a century ago, in his celebrated ‘On Liberty and Considerations on Representative Government’, John Stuart Mill argued very convincingly that education should be left free. He said : “A general State education is a mere contrivance for moulding people to be exactly like one another. It establishes a despotism over the mind.” He rose to the height of his advocacy for human liberty in this noble expostulation : “All attempts by the State to bias the conclusions of its citizens on disputed subjects are evil.” This tradition of academic freedom later got its great reinforcement in the liberal thinking of Bertrand Russell who observed in his Sceptical Essays” : “The Schoolmaster, in the modern world, is seldom allowed a point of view of his own.

It may be safely assumed that it is this British tradition that has informed our university system with the concept of educational autonomy or academic freedom. One reason why the University Grants Commission was set up in India was the potential danger of Government interference in the affairs of the universities. But the major ground on dependence by the universities on the Government being financial support, it constantly rubs against the cushion of autonomy wedged in between the university and the Government. If we have learned to imbibe fully the spirit of British liberalism, financial patronage offered by the Government would not be abused as an excuse for doing violence on the chastity of the university by the State. The British universities now get more than two-thirds of their money from the State and over 75% of their students are assisted by various Government scholarships. Yet they are self-governing and there is good reason to hope that they will continue free and independent. The older universities like Oxford and Cambridge enjoy a tradition of deep-rooted intellectual liberty which the modern universities have been able to share.

But there never was complete freedom anywhere, at any time, in the history of education. In the seventeenth century even Oxford and Cambridge could not escape the attention of King and Parliament and, during late periods, they were the targets of Royal Commissions and Parliamentary enactments. Cherishing the uncompromising ideal of unspoilt freedom in education is a dream of the soft-headed academician. Even Russell admitted that there are limits to the freedoms that could be granted to children. His conclusion is an eye-opener : An element of discipline and authority must exist.” Why so ? One to draw a line of demarcation between freedom of thought and expression on the one hand, and freedom of instruction. The extent of freedom permissible in the former will get considerably shrunken when it comes to the latter. Unlike thought or opinion, education is a social activity involving the destinies of countless children who go to shape generation. Many agencies are deeply concerned in this continuous social process, e.g., State, religion teacher, parent and, the child itself. They not only do not represent similiar interests, but their interests, being exclusive remain conflicting and contradictory. Education has stayed always to be controlled by the strongest suitor among the contendors. So the most cardinal issue in education has never been : “Who should control education ? “Prof. Lester Smith has put it more revealingly, the caption of one of his books being ‘to Whom Do Schools belong ?

When the State became alive to this crux of educational question, it was too late in the day. In antiquity and in the Middle Ages, until the Renaissance, the value of education was properly understood only by religion and philosophy. When, however the state had a taste of education applied as an administrative subject, the diverse uses to which education could be put became clear to it. The best use, it was found, was to employ the school as an instrument to make people do what a central authority would direct and thereby to avoid all criticisms of the powers that be.

It would be self-deluding if one is to believe that this sort of overbearing control by the State is possible only under conditions of totalitarianism. No Government can stay functioning without taking a therapeutic dose of despotism at regular intervals. This is true even of a Welfare State. Once the principle of planning is accepted, the State automatically becomes the archplanner. The other groups and associations of people are forced to keep time with the most dominant clique in the nation which is the State University in one of the many associations outside the pale of the State that has been weekened and shattered to such an extent that the use of the term ‘autonomy’ becomes an anachronism. □

(*Courtesy : The Hindu*)

CAMPUS NEWS

Himachal organises seminar on correspondence education

The 3-day National Seminar on Correspondence Education, held in Simla by way of a resolution requested the University Grants Commission and the Ministry of Education, Government of India, to set up an Open University for the promotion and proper development of Correspondence education in the country. The open university, according to the resolution, should function as an apex body for the promotion and development of Correspondence Education. The University should be organised on federal lines making the existing and future institutes of Correspondence Courses as its constituent units. By way of the second resolution, the Seminar urged the Planning Commission to make adequate allocations for Correspondence Education so that it may be able to serve the educational needs of the weaker sections of the society.

The Seminar resolved also that efforts should be made to integrate the two schemes viz., of Correspondence Education and Continuing Education. The Seminar was of the view that Institutes of Correspondence Education have already built up an infra-structure and these institutes could play a very useful role in promoting Continuing Education also. This would save the national exchequer, the cost of separate Continuing Education Department.

The Seminar resolved that the Bar Council of India should recognise the degrees of LL.B. and BGL, being given by some institutes of Correspondence Education, for all purposes.

The Seminar in its concluding session held under the Chairmanship of Shri P.P. Srivastava, Vice-Chancellor of Himachal Pradesh University also made the following recommendations. :

1. The objectives of Correspondence Education should also include "acquisition of vocational/technical skills" as also "Continuing Education".

2. In order to make Correspondence Courses relevant to the needs of the society, Correspondence Education should be broad-based so as to include vocational and job oriented courses. The UGC and State Governments should give adequate financial assistance for developing such courses.

3. The Correspondence Institutes should be treated equal and at par with the University teaching departments for all academic, administrative and electoral purposes.

4. All senior positions of Professors and Readers should be created in the Institutes of Correspondence Courses.

5. The teachers of the Institutes of Correspondence Courses should be represented on various University Bodies such as Faculties, Boards of Studies, Research Boards, Academic Council etc.

6. Qualifications, designations, mode of appointment and the pay-scales of the teachers of Correspondence Courses should be the same as for the teachers in the University Teaching Departments experience of working in the Institutes of Correspondence Courses should be a desirable qualification.

Bangalore holds symposium on medical colleges

A one-day symposium was organised by the Karnataka medical students and Junior Doctors Association in Bangalore. It urged the government not to open medical colleg without consulting the academic bodies.

A resolution adopted at th symposium read: "This meetin requests the Government t observe the provisions of Section 53 of the Karnataka Universities Act, 1976, and obtain th opinion of the academic bodie of the universities as to th need for and location of the new medical colleges." Another major recommendation was that the Government should keep in abeyance its decision on opening medical colleges till an expert committee went into the issue in consultation with the Indian Medical Council.

Dr. K.H. Cheluvaraju, Professor of Political Science, Bangalore University, criticised the Government's sanctioning medical colleges on caste and community basis, and objected to the Government's taking away the power of granting affiliations to new colleges under Section 53 of the Universities Act. He felt that there was no rational policy or programme on the part of the Government in opening medical colleges. The Government had not obtained the opinion of expert bodies like the National Planning Commission, Directorate of Medical Education or the university. He pointed out that the Bangalore University Academic Council had asked the Government to reconsider the question of opening more engineering colleges when it came before the council, and said the council would do the same thing as regards medical colleges also.

Prof. K. Dwarakanath, President of the Federation of University and College Teachers' Associations in Karnataka, said the Government's retaining overriding powers in the matter of granting affiliations to new colleges under the Universities Act struck at the root of university autonomy.

Dr. Narsingh Bansingh, President of the KGC & DC Teachers' Association, also opposed the opening of medical colleges not based on any principles or on future needs. The association had given a 12-point memorandum suggesting measures to ensure the delivery of health care to the community and this included the norms for setting up new colleges. The Ambedkar Medical College was originally intended to be set up in backward Kolar District but was later shifted to Bangalore for rank commercialisation, he charged. Instead of locating all five colleges in Bangalore, the Government should ensure that each district got a college.

Mr. K.N. Hari Kumar, Editor, Deccan Herald, said medical institutions in India had mainly benefitted the advanced capitalist countries of the West. Quoting the study reports of the World Bank and other expert bodies, he pointed out that India was the largest supplier of medical manpower to these countries. As far as the new medical colleges were concerned, the secondary beneficiary would be the managements, which would mint money, and politicians. Besides, the rural rich who could afford to buy expensive drugs would also stand to gain. He wondered why the recommendations of the expert committees had not been implemented in this matter, and said not only was there no need for new medical colleges but a few of the existing colleges might have to be closed down. A change in social structure based on strong political will was the answer to the problem.

Plea for conservation of historical records

Mr. C.P.N. Singh, Chancellor of Lucknow University while inaugurating the four-day conference of the Museum Association of India held at the State Museum of Lucknow said that some of the objects lying in the private collections were irreplaceable and determined efforts should be made through well-conceived exchange programme with other museums in the country and abroad to preserve them in museums. He said that recent excavations had revealed new facets of history during the ancient times and studies undertaken by scholars would reveal many interesting aspects of our past. He highlighted the need for better and larger museums in the country to preserve the vast and rich cultural heritage. The museums were not only media of educating the masses but were also of immense value to scholars.

Dr. N.R. Banerji in his presidential address regretted that museum employees were low paid in spite of their technical and highly specialised nature of work. He said the museum workers needed better pay scales equivalent to that of lecturers in a college. He emphasised the need for training museum personnel. He regretted that even though museum techniques were complex there were no sufficient training facilities available in the country. Mr. Ammar Rizvi, Cultural Affairs Minister of Uttar Pradesh said that the government would provide full facilities to museums for their expansion and betterment.

Indo-GDR collaboration to be strengthened

Shri Baby John, Minister of Education, Kerala State, while inauguratig the Ship Technology Building established in collaboration with the GDR recalled the aims and objectives of Cochin Varsity and said that the University should go ahead with innovative programmes of study and research and should play a leading role in the field of higher and technical education. The University should think in terms of having an extension programme to bring the results of research programmes in its laboratories to factories and fields. Such programmes would receive due consideration by the Government, he said.

Gracing the occasion of the opening of the Ship Technology Department building at the Cochin University Compus, Dr. Engel said that the objective of the visiting GDR delegation headed by him was to explore the possibilities of widening the existing collaboration between the two countries in the realm of higher education. He expressed great satisfaction over the growing co-operation between Cochin University and Rostock University in the field of the Ship Technology. He assured all possible help to the proposed post-graduate Course in Printing Technology to be started by Cochin Varsity.

The University gave a warm reception to the visiting GDR delegation. The Vice-Chancellor Dr. M.V. Pylee, who presided over the opening function welcomed the distinguished guests and recalled the assistance rendered by the GDR to Cochin University. Shri Ajith Gangadharan, Ship Technology Student, presented an address of welcome to the Delegation. Dr. K.I. Vasu, Pro-Vice-Chancellor, proposed a vote of thanks.

600 adult education centres for Tamil Nadu

Six hundred adult education centres will start functioning in higher secondary and high schools in Tamil Nadu soon. Vocational non-formal education centres, 150 in number, will also be commissioned by the Directorate of Non-Formal Education. The vocational centres located in urban areas will give training in varied skills and trades suited for the locality to 25 learners in each centre. At the end of the five-month course, the District Adult Education Officers will conduct skill tests, and issue certificates to those who are found proficient.

The 600 adult education centres are to be administered by the Parent Teacher Association (PTA) of each institution. The expenditure is to be shared equally by the State Government and the PTA concerned. The State Government has already sanctioned Rs 3 lakhs for each of the two schemes.

Genetic engineering to contain viral diseases

The biological revolution driven by the advances in genetic engineering with the techniques of gene modification and cloning and the hybridoma would soon offer 'tailor made' and "defined" diagnostic antigens and antibodies, Dr. R. Najera, a renowned expert on virology and chief of the virus diseases unit, WHO, Geneva, has made a special study of the subject. He said the antigens and antibodies would have absolutely known specificity and homogeneity in amounts so big as to make it possible to "provide" most laboratories in the world with the same batch of agents "for any desired period of time." Forecasting the revolution to come, Dr. Najera stressed the need for rapid viral diagnosis. He said, "Parallel with these improvements in diagnosis, new and improved vaccines, interferon and antiviral substances are going to be produced. These improvements put even greater weight on rapid diagnosis as more and more viral diseases will be treated in a practical manner either through treatment of the individual or of the at-risk population."

The real importance of this so-called biological revolution is given by the relative simplicity and low cost of the methods employed making theoretically possible to transfer this scientific knowledge and its corresponding technology to the developing countries with much less effort and need of capital investment than the current technology. This probably could help in reducing the existing gap between developed and developing countries.

Cancer research centres planned

Dr. M.S. Swaminathan, Member of the Planning Commission, said in Bombay that the Union Government was planning to set up six cancer research centres to help understand the mechanism of the killer disease. Inaugurating an international symposium on "normal and abnormal growth and differentiation" organised by the Cancer Research Centre (CRI) of the Tata Memorial Centre, he stressed the need for giving priority in allocating more funds for cancer research, control of leprosy and other communicable and nutritional disorders.

Dr. H.N. Sethna, Chairman of the Atomic Energy Commission who presided, made a strong plea for intensifying the basic research on cancer discounting the approach that "poor countries does not afford it". Nations, which ignore research, would continue to depend on borrowed and often outdated science and technology. Over 100 delegates from India and abroad participated in the three-day symposium.

Rs 30 crores for Lucknow PGI

The King George's Medical College, Lucknow, is likely to be upgraded into a postgraduate institute. A committee comprising medical college teachers and other officials of the State Government has been constituted by the State Government to examine the issue in detail. The groundwork of choosing sites and other essentials are likely to be completed soon. The institute will have many building complexes. The main functional 16-storey building would be built on a 30-acre plot of land. The Uttar Pradesh Government has sanctioned a sum of Rs. 30 crores during the Sixth Plan. The present medical college building spreading over 220 acres will not be demolished because of its historic importance. Offices and certain administrative wings will be housed in the new building. A residential colony for the teachers and the staff of the institute will also be constructed on a 60-acre plot near the Artificial Limb Centre soon.

Career guidance exhibition

'Informex 80' an information exhibition on careers and courses was inaugurated at the Madras University by the Tamil Nadu Finance Minister, Mr. V.R. Nedunchezhiyan. The exhibition was organised by the Universit Employment & Informatio Bureau and the University Students' Advisory Bureau. Th exhibition portrayed the variou job opportunities available fo the educated youth. A semina on self-employment sponsored by the State Government was also held to help the unemployed graduates registered with the bureau and the students interested in developing entrepreneurial skills.

Temple architecture course for Madras

The Senate of the Madras University at its recent meeting approved the institution of a BSc degree course in Temple Architecture under the Faculty of Engineering. The Senate also approved the institution of a Diploma Course in English language teaching and a postgraduate diploma course in Home Science and Rural Development.

Prof. G.R. Damodaran, Vice-Chancellor of the University, said that the correspondence courses will be planned and offered from the academic year 1981-82. To begin with a limited number of courses for the BA and MA degrees besides the B.Com. degree course would be offered. History and Economics would be covered in the first instance. More subjects would be taken up later on. Courses involving practical work will be included at a later stage.

Annamalai chair for rural development

A Chair for rural development will be set up at Annamalai University with a generous grant of Rs 500,000 from the State Bank of India. Dr. Raja Sir Muthiah Chettiar, Pro-Chancellor of the University made this announcement at a recent meeting held at Chidambaram.

Naini Tal lake polluted

Mr. S.M. Dal, Chief Investigator of Lake Project, Kumaon University, said in Rewa that e Naini Tal lake water was ighly polluted and had become oxic posing threat to the fish auna. He was presenting a paper t the International Symposium n Tropical Rural Ecosystem. Mr. Dal said that the pollution was lue to organic waste being lrained through Municipal sewage system into the Lake summer resort. The organic waste was setting down at the bottom of the Lake producing toxic gases like ammonia, methane and hydrogen sulphaide.

Chavan demarcates backward states

The educationally backward States, viz, Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal, will get special central assistance for non-formal education under the programme of universalisation of elementary education. This announcement was recently made in Parliament by the Union Education Minister, Mr. S.B. Chavan.

Employees seek representation in university bodies

The University Employees Federation in Tamil Nadu has urged the Government to take immediate steps to amend university legislation to give representation to non-teaching staff in the Governing Bodies of the universities like the Syndicate, the Senate and the Board of Management. The two-day meeting of the Federation's State Council was held in Chidambaram to consider the demands of the Federation. The Federation has earnestly requested the government to withdraw the cases filed against the staff of the Madurai-Kamaraj University in connection with their recent agitation. It has also urged the need to provide housing facilities for university employees in the State.

Antibodies now produced in laboratory

Prof. G.P. Talwar of the All India Institute of Medical Sciences, New Delhi, has evolved a technique of fusing cells of different kinds to produce antibodies in test-tubes outside the human body. "Antibody" is the substance the body makes in response to vaccination to protect a person against an infection. The new genetic method enables the production of huge quantities of specific antibodies in "test-tube factories". The implications of this new biological development are enormous. Instead of giving a vaccine—whose success is unreliable—it may be possible, in some cases, to give the antibodies directly in what is called "passive immunisation".

The technique of making antibodies in test-tubes, was initially developed abroad in 1975.

The technique involves "fusing" the genes of an antibody-forming cell into a cancer cell (myeloma cell) which has the ability for rapid growth. The hybrid cells formed (called hybridoma) are cultured in test-tubes where they work like antibody factories.

By fusing the 'myeloma" cell with the antibody-making cell from the spleen of mice. Prof. Talwar and his team have produced antibodies against HCG (Human Chorionic Gonadotropin)—a hormone produced during pregnancy and in certain types of cancer.

The HCG antibody, manufactured in test-tube, can be used to develop simple "kits" to diagnose pregnancy and cancer.

It may even be possible to use these antibodies to terminate pregnancy.

Prof. Talwar said the technique of making antibodies in test-tubes "will radically transform the industrial procedures for the manufacture of immunological reagents and diagnostic kits."

Prof. V. Ramalingaswami, Director-General, Indian Council of Medical Research (ICMR), said antibodies, made using the hybridoma technology, "have begun to change the course of history of man's fight against disease".

Hurdles in NIS south campus

The south centre of the Netaji Subhash National Institute of Sports in Bangalore is yet to get the promised land. Though the south centre has been promised a 75-acre plot of land for the construction of a new complex but the land has not been yet transferred due to certain technical reasons. A few years ago the Karnataka Government and the Bangalore University had agreed to give the NIS a 75-acre area on the outskirts of the city. Subsequently it was found that nearly half of the area was rocky in nature and the earlier plans were modified. As per the new agreement a 60-year lease will be given to NIS by the Government on a permanent site.

Indian Academy of Sciences meets in Lucknow

A three-day annual meeting of the Indian Academy of Sciences was held at the Birbal Sahni Institute of Palaeobotany, Lucknow. The meeting was hosted by the four national research laboratories of the CSIR, viz., the Central Drug Research Institute, the National Botanical Research Institute, the Central Institute of Medicinal and Aromatic Plants, the Industrial Toxicology Research Centre and the Indian Institute of Sugarcane Research and Lucknow University. Dr. S. Varadarajan, Chairman and Managing Director, Indian Petrochemicals Corporation Ltd. and the President of the Academy delivered the presidential address at the inaugural function held under the chairmanship of Prof. M.G.K. Menon, Director-General of the CSIR. The scientific deliberations were held in six sessions spread over three days. Eminent scientists like Prof. Satish Dhawan, Dr. B. Nag. Dr. T.N. Khoshoo, Dr. Nityanand and Dr. C.R. Krishnamurti participated in the deliberations. The topics discussed at the meeting were : (i) Recent developments on the uses of recombinant techniques and (ii) Recent developments in high energy physics.

News from UGC

Revised scheme for utilisation of services of retired teachers

Since 1961-62, the University Grants Commission had been implementing the Scheme for Utilisation of Services of Retired Teachers (USRT) under which universities, colleges and approved institutions are assisted to utilise the services of teachers of outstanding merit, who have crossed the normal age of retirement but are otherwise fit to continue their teaching and research work.

An honorarium of Rs. 9,000 per annum and an annual grant of Rs. 2,000 for meeting authorised contingent expenditure in connection with the approved research and teaching work were admissible to an awardee.

Assistance to a person under the scheme was limited to a period of three years in the first instance. On the recommendation of the Vice-Chancellor concerned, it could be continued, thereafter, till the age of 68 years, provided the teacher retained active interest in academic work. Assistance under the scheme was normally available for a maximum period of five years.

In 1978, it was decided that the scheme of USRT may be reviewed. Pending this review, in June, 1978, the Selection Committee, selected retired teachers under the scheme for a period of two years. However, on representation made by some awardees, it was decided in January, 1980 that awards under the scheme may be continued for the full tenure of three years.

The Commission at its meeting held on the 26th October, 1979 decided that the scheme of USRT might be discontinued. It was, however, agreed that superannuated teachers should be eligible to participate in any of the following schemes :—

(a) Preparation of university level books.
(b) Educational innovations.
(c) Support for research projects.

In the case of projects which are finally accepted the principal investigator (the superannuated teacher) would be paid an honorarium of Rs. 750 per mensem in addition to such other facilities which may be recommended as part of the project.

Normally, no person beyond the age of 65 years may be considered for participating in any of the above schemes, unless in exceptional cases, the concerned panel makes a specific recommendation to this effect.

In the original scheme of USRT, awards were made initially for a period of three years, but the UGC could grant extension upto a maximum of two years subject to the age limit of 68 years on the basis of the assessment of the contribution of the teachers during the initial tenure of the award and the research work proposed to be done.

On the analogy of the provisions made in the original scheme regarding extension of tenure, it was agreed that extension beyond three years may also be considered in the case of outstanding retired teachers who were already working under the scheme at the time the decision to discontinue the scheme was taken by the Commission.

The Commission approved of the action already taken in paras 3 and 6 and also decided that extension might continue to be granted as provided for in the original scheme, in the case of those retired teachers who complete or have completed the first tenure of three years.

At present, 200 retired teachers are working under th scheme.

Criteria for viability of colleges

The University Grants Commission has accepted the criteria suggested by the working group for determining viability in respect of Arts Colleges, Science Colleges and multi-faculty colleges as given below :—

(i) There should be at least four departments in the colleges.
(ii) There should be at least two teachers in each department.
(iii) There should be a minimum of ten permanent teachers in the college, excluding the Principal and the Director of Physical Education.
(iv) The pupil-teacher ratio in the college should not exceed 20:1. This, however, could be relaxed in special cases.
(v) Annual expenditure on books and journals should be at least Rs. 15 per student.
(vi) Annual expenditure on laboratory equipment should be at least Rs. 60 per science student.

These guidelines will be kept in view while determining the basis on which grants may be provided to the colleges during the Sixth Plan.

Travel grants to teachers for attending international conferences

The University Grants Commission is providing assistance to college teachers towards travel, maintenance and payment of registration fee for presenting their papers at international conferences. Assistance from the Commission is available to the extent of 50 per cent, provided the other 50% is met by the college/University/State Government / recognised professional organisation from their own funds.

The Commission will meet the cost of international air fare by economy class, both ways. The application along with the recommendation of the college concerned should reach the Commission's office at least 60 days before the actual date of the conference, along with three copies of the full text of the paper to be presented at the conference and a copy of the letter of acceptance of the paper by the conference secretariat, along with a statement about the source from which the other 50% of the expenditure will be met. Decision on the assistance is taken by the Commission after an assessment of the paper by its referees.

News from Agril. Varsities

Three crops raised in a year

Farmers in the north-western region will now be able to grow three crops a year on the same piece of land. This has been made possible with the recent introduction of short-duration varieties of *kharif* pulses. The new variety of *sathi moong*—G-65—is *sown* towards the end of April. Before it is harvested, towards the end of June or the first week of July *arhar* is planted as an inter-crop. Scientists at the Indian Agricultural Research Institute have made this practicable by evolving DL-78-2 and DL-84 varieties of *arhar*. These new varieties of *arhar* mature in 140 days, as against 300 days taken by the traditional varieties. The grain quality of the new varieties compares favourably with the old *Kanpuri dal*. The new *moong* and *arhar* varieties give a yield of about 10 quintals per hectare and 18 to 20 quintals per hectare respectively. The *arhar* crop is ready for harvesting by mid-November, which is also the ideal time for sowing wheat.

Dr. H.K. Jain, Director of I.A.R.I. said that with the introduction of the new pattern of sowing, *kharif pulses* would no longer remain products of marginal lands only. "Even the rice growers will gain by adopting the new pattern". According to him, the new sowing scheme would also reduce, the expenses normally incurred on weeding, fertilisers and irrigation. He said "a new situation is coming up. The emergence of blight on *paddy* this year has made the scientists vigilant. All their efforts are concentrated on evolving a new strategy which can eliminate the uncertainty and risk posed by the paddy crop. The wheat-rice cropping pattern, practised for long, has led to a build-up of diseases and pests" and also made the soil poorer. To help maintain the soil texture, he recommends substitution of the *paddy* crop with *pulses* every alternate year. The new varieties of *pulses*, Dr. Jain says, will also serve the cotton growing areas. In situations where the sowing of cotton is delayed growers can switch to *arhar*, which will give them more or less equal returns.

Agricultural agreement with USSR

A new long-term agricultural agreement is likely to be signed between India and the Soviet Union. This would go a long way in strengthening the major achievements in different branches of agriculture. Preliminary discussions in this connection have already taken place when Rao Birendra Singh, Agriculture Minister, visited Moscow. The new areas of cooperation would include branches of fur breeding and breeding new varieties of agricultural crops and new species of livestock, pest and disease control, exchange of genetic funds and samples of pedigree seeds. It is also proposed to expand the scope of student exchanges in the field of agriculture.

ICAR aid for PAU

The Indian Council of Agricultural Research has sanctioned a sum of Rs 5-crore assistance to the Punjab Agricultural University, Ludhiana for a new research project.

Dr. Amrik Singh Cheema, Vice-Chancellor of the University, said in Faridkot that these funds have been given by the World Bank. Apart from setting up a new research station at Balachaur in Hoshiarpur district, all the existing research stations at Jullundur, Gurdaspur, Abohar, Gangian, Kapurthala, Patiala and Bhatinda will be strengthened.

PAU scientists honoured

Dr. S.S. Prihar, Professor of Soil Physics, and Dr. Ranjodh Singh, Soil Scientist in the Department of Soil Science of Punjab Agricultural University, have won the 1980 F.A.I. Silver Jubilee Award of Excellence for their outstanding work in the field of fertiliser use in rainfed/dryfarming areas. The award which has been instituted by the (Fertiliser Association of India) consists of Rs 5,000, a medal and a citation.

IARI hosts seminar & conference

As a part of the Golden Jubilee celebrations of the ICAR, a National Seminar of Farm Journalists was organised at the Division of Agricultural Extension of the IARI. The purpose of the seminar was to educate the farm journalists about the latest developments in agricultural research, including animal husbandry, dairy, veterinary science and rural development as well as to provide them an opportunity to discuss the ways and means of improving the status of farm-journalism in the country. About 70 farm-journalists representing English and regional languages' farm magazines and newspapers from all over the country attended the seminar and various recommendations were made by them for improving farm journalism in the country.

The Division of Entomology of this Institute hosted the 2nd International Conference on Apiculture in Tropical Climates. The conference was inaugurated by Rao Birendra Singh, Union Minister ofAgriculture and Rural Development. Dr. M.S. Swaminathan, President, International Bee Research Association, Shri Somdutt, Chairman, Khadi and Village Industries Commission and Dr. Eva Crane, Director, International Bee Research Association, U.K., delivered lectures in the inaugural function. Shri Bhishma Narain Singh, Union Minister of Communication] and Parliamentary Affairs released the commemorative stamp on this occasion. About 60 foreign delegates from 22 countries and 163 Indian delegates participated in the conference. The post-conference symposium on Apiculture in Tropical climates was held at the University of Agricultural Sciences, Hebbal, Bangalore.

Technologue on bio-instrumentation systems

Dr. Harsh Vardhan, Director of the Central Scientific Instruments Organisation (CSIO), Chandigarh, while inaugurating the All-India Technologue on Bio-Instrumentation System at the Punjab Agricultural University said that bio-instrumentation played an unescapable role in the development of various areas of agriculture, medicine and veterinary sciences. He further said that there was a need of analytical instrumentation for introduction of new and better crop varieties and use of modern computers and data processing system for biological and agricultural sciences. The Technologue which has been sponsored by the UNESCO/ICAR Centre of Advanced Studies in Agricultural Engineering and organised by the Department of Electrical Engineering of the College of Agricultural Engineering was attended by more than 40 participants from various engineering and medical colleges from all over the country.

Dr. Vardhan laid special emphasis on the role of instruments in the development of modern sciences. He pointed out that the latest advances in instrumentation engineering had helped in the advancement of modern agriculture as a result of precise measurement of various parameters controlling the productivity of agricultural crops. He described how the latest advances in instrumentation engineering were helping in diagonising and treatment of various diseases uplifting human being as well as animals.

Prof. A.P. Bhatnagar, Dean of the College of Engineering and Sub-Project Coordinator, welcomed the delegates and explained the objectives of the technologue. He also described the other functions in which the UNESCO/ICAR projects was involved.

Sports syllabus modified

The Haryana Agricultural University has made several changes in the syllabus of its College of Sports. The new syllabus which has come into effect in the final year of the current session is broad based on the pattern followed in Indian universities for awarding the diploma in physical education. Mr. S. Srivastava, Principal of the College said in Hissar that this system devised for Hissar College was the best under the existing conditions of the university. The new syllabus was equal to the degree of bachelor of arts and diploma in physical education. Students with the HAU degree can now go in for master's programme in arts/humanities. The students however would have to spend four years after pre-university at HAU to get a degree of bachelor of sports, humanities and physical education. The pre-university programme will be followed by three years of humanities programme similar to that of Kurukshetra.

Advertisement

(Contd. from page 699)

doctroal standard or published research work of high standard in journals of repute;

(c) about 10 years experience of teaching Postgraduate classes and or research; and

(d) experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in the discipline concerned.

Pay Scale : 1500-2500.

Candidates already in service should send their applications through proper channel. An advance copy may, however, be sent direct.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original reasearch papers, degrees and certificates etc for verification.

The University reserves the right to negotiate with suitable person or persons, if necessary, who may not have applied formally.

The University also reserves the right to fill up or not to fill up the post or to call only selected candidates for interview.

Candidates are required to give the following particulars :

1. Name of the post :
2. Name of the applicant (in block latters) :
3. Date of birth :
4. Address for correspondence :
5. Province of domicile :
6. Academic qualifications : giving division and percentage of marks in each examination from high school onwards : (Attach attested copies of all the degrees/certificates).
7. Teaching experience with detail of Post held, name of the institution, period with date and last pay drawn : (Post-graduate and Under-graduate teaching experience is to be shown separately) :
8. Research work and experience of research guidance, Number of students guided in each programme :
9. Papers/Books/Articles published. if any: (List to be enclosed):
10. Minimum salary acceptable :
11. IPO No (s) : ——dated :—— (MONEY ORDERS OR CHEQUES ARE NOT ACCEPTABLE)
12. Any other information worth mentioning, not covered above :
13. Signature of the candidate with date :

Note : Applications not in conformity with the above requirements and Applications received after the due date will not be entertained, and no correspondence will be entertained in this regard.

K.D. Gupta
REGISTRAR

Science & Technology

Rao stresses role of science in national progress

Dr. V.K.R.V. Rao said in Bangalore that acquisition of modern science and technology would take a nation further in the developmental process than periodic infusions of foreign aid. The importance of science and technology had only been "academically" and "politically" recognised, at least in India, and no constructive efforts had been made so far to put this recognition into practical use. Dr. Rao was inaugurating a five-day workshop on "Management of transfer of technology by public enterprises in the Economic and Social Commission for Asian and the Pacific (ESCAP) Region.

Warning against the indiscriminate buying of attractive but perhaps useless technology, Dr. Rao said technology should be bought on an individual basis, to suit the interests and needs of an individual country. He said that technology be environmentally relevant and aimed at creating an ultimate self-reliance among the recipient nations. If this self-reliance was not built up, transfer of technology would become an "unending process of dependence", he said.

Mr. Rasto Macus, ICPE Project Co-ordinator, said that dramatic structural imbalances existed today between the developed and developing world in the area of technology transfer. With the developed nations holding almost 95 per cent share of this market, the developing nations were in an unfortunate bargaining position and were often forced to buy entire technology "packages" whether or not they were relevant to the real needs of the country concerned. This situation had to change. Examining specific case studies of technology transfer arrangements based on the specific experience of public enterprises in the ESCAP region, the workshop would attempt to strengthen the bargaining position of developing countries in the transfer process.

Place of technology in national development

Delivering the Dr. H.L. Roy Memorial Lecture organised by the Indian Institute of Chemical Engineers, Mr. A.L. Mudaliar, Chairman of the ICI Companies in India, called for a reassessment of the place of technology in Indian development so that it could be better targeted and beamed to subserve national priorities. Tracing the context of the Indian development process, Mr. Mudaliar noted that the advent of independence and introduction of national economic planning had marked a dramatic watershed from the long stagnation of the first half of this century in terms of generating new impulses in the system. He referred to the significant achievements which had been registered in agriculture industry and foreign trade sectors in the past three decades in our pluralistic society following the practices of parliamentary democracy with its long-chain accountabilities and said a significant accretion to the basic strength of Indian agriculture the widening scope of industry and the technologies it applied and development of the third largest corpus of scientific and technical manpower resources in the world had marked the progress of the country. These were major strengths on which future growth could be built upon.

Mr. Mudaliar said although economic growth had taken place distribution of its benefits had become increasingly uneven over the years. The long established goals of broad-based development continued to elude us with the result that the automatic quickening of market growth which could be so much of a prime mover in a developing country like ours had not taken place. The energy situation was posing a host of new challenges as was the continued capital cost escalation. On the subject of targeting of technology, Mr. Mudaliar quoted the "Green Revolution" in Indian agriculture as an eminent example of successful management of the innovation chain which the Indian farmer came to adopt in a spirit of entrepreneurship. He emphasised the need for a similar effort in the area of energy in the present context. Mr. Mudaliar expressed his belief that in order for technology to become firmly rooted, it must be sufficiently diffused throughout our national economic life and seen to be contributing to progress at the grassroots level. Thus it had to directly help in the production of goods at low costs for the largest strata of society to satisfy their needs for food, clothing, shelter, health and such other basic priorities. This entailed a diffusion of technological effort throughout our economic system.

Marathwada to hold symposium on perspectives in research on protozoa

An all India Symposium on "Perspectives in Research on Protozoa" was organized by the Department of Zoology, Marathwada University. The symposium was the first of its kind in focussing attention on protozoan research in all its aspects brought together workers dealing with protozoan parasities of man as well as animals, cell biologists, ecologists and biochemists dealing with protozoa as also those handling chemotherapy and control of protozoan infections. The programme included invited lectures and panel discussions/mini symposia on many aspects of topical interest, besides contributed paper sessions.

Conferences, Seminars and Workshops

January-March, 1981

Date	Title	Venue	Sponsoring Body
1—3 Jan. 1981	Symposium on Quantum Electronics.	Pune	Department of Atomic Energy.
1—14 Jan. 1980	Winter School in Theoretical High Energy Physics.	Kalpakkam	Tata Institute of Fundamental Research.
1—15 Jan. 1981	Dynamics of Plates & Shells.	Bangalore	Q.I.P.
2—3 Jan. 1981	Apex Seminar on Technology Management for Power Systems.	New Delhi	Institution of Engineers, New Delhi.
3—7 Jan. 1981	Indian Science Congress 1981	Calcutta	Indian Science Congress Association.
4—8 Jan. 1981	Second LAIH PSP Symposium.	Bombay	Chemical Engineering Department IIT Bombay.
5—6 Jan. 1981	Productivity Agreements and Trade Unions.	Bombay	National Productivity Council.
5—6 Jan. 1981	Standardisation & Quality Control for Agricultural Implements.	Ludhiana	National Productivity Council.
5—10 Jan. 1981	Physical-Chemical & Mineralogical Control in Cement Manufacturing Processes.	Ballabgarh	Cement Research Institute of India.
5—10 Jan. 1981	Workshop on Air, Fuel & Oil Filters	Pune	Central Institute of Road Transport.
5—17 Jan. 1981	5th Management Course for CGHS Officers.	New Delhi	Department of Med. Care & Hospital Administration, National Institute of Health & Family Welfare.
5—25 Jan. 1981	Training Course on Neurobiology	Panjim	Tata Institute of Fundamental Research.
6—8 Jan. 1981	Effective Management of Training.	Goa	National Productivity Council.
6—8 Jan. 1981	Sugar Plant Maintenance.	Bangalore	National Productivity Council.
7—8 Jan. 1981	Super Finishing Process.	Bombay	National Productivity Council.
9—12 Jan. 1981	XXVII All India Library Conference.	Hyderabad	Academy of Library Sc. & Documentation.
10—12 Jan. 1981	International Symposium on Digital Communication.	Bombay	Electrical Engg. Deptt, IIT Bombay.
12—23 Jan. 1981	Operations Research in Practice.	Bombay	National Institute for Trg in Inds. Engineering.
10—14 Jan. 1981	International Council of Societies of Industrial Design Executive Board Meeting.	Ahmedabad	National Institute of Design.
13—26 Jan. 1981	Industrial Instrumentation.	Bangalore	BHEL (Bharat Heavy Electricals Ltd.)
15—16 Jan. 1981	Seminar on Coal Theme.	Delhi	National Productivity Council
15—17 Jan. 1981	1st National Seminar on Design Education	Bombay	National Institute of Design
16—17 Jan. 1981	Energy Substitution	Patna	National Productivity Council
19 January 1981	1st National Seminar of Professional Designers on Design and Materials.	Bombay	National Institute of Design
19—20 Jan. 1981	Hydraulic Systems	Bombay	Aero Engg. Department, IIT Bombay.
19—23 Jan. 1981	2nd Special Symposium on Natural Radiation Environment.	Bombay	Department of Atomic Engergy, Bhabha Atomic Research Centre
19—24 Jan. 1981	Spare Parts Management.	Bombay	National Institute for Trg. in Industrial Engineering.
19—24 Jan. 1981	Workshop on Bus Accident Control.	Pune	Central Institute of Road Transport.
19—30 Jan. 1981	Information Systems for Financial Management.	Bombay	National Instt. for Training in Industrial Engineering.
19 Jan-6 Feb. 1981	Organisation & Methods.	Bombay	National Instt. for Training in Industrial Engineering.
20—21 Jan. 1981	FRP and Rubber Lining	Ahmedabad	National Productivity Council.
20—24 Jan. 1981	Office Administration	Ahmedabad	National Productivity Council.
21—22 Jan. 1981	Machine Tool Reconditioning.	Calcutta	National Productivity Council.
21—23 Jan. 1981	Orientation Training Seminar under MPW Scheme for State level Officers.	New Delhi	Department of Community Health Administation, Nat. Instt. of H & FW
24—25 Jan. 1981	Symposium on Training of Personnel for the Mineral Industry	Calcutta	Mining, Geological, Metallurgical Institute of India.
24—25 Jan. 1981	Weekend course 'Optimal Design of Water Supply and Wastewater Removal Systems.	Bombay	Civil Engineering Department IIT, Bombay.
27—31 Jan. 1981	Training Workshop on Innovations in Juvenile Justice Systems in the Asian Region.	New Delhi	International Council on Social Welfare Regional Council for Asia & Western Pacific, National Instt. of Social Defence (Deptt of Social Welfare) and Indian Institute of Public Admn.

Date	Title	Venue	Sponsoring Body
27 Jan-6 Feb. 1981	Managerial Skills for Technical Personnel.	Bombay	National Institute for Training in Industrial Engineering.
28 Jan-1 Feb 1981	6th Indo-Soviet Symposium on the Chemistry of Natural Products.	Pune	National Chemical Laboratory.
January 1981	Energy in Agriculture	Ludhiana	College of Agricultural Engg. Punjab Agricultural University.
January 1981	68th Session of the Indian Science Congress.	Varanasi	Banaras Hindu University.
January 1981	Watershed Management.	Ludhiana	College of Agricultural Engineering, Punjab Agricultural Universtiy.
Jan/Feb. 1981	Seminar cum Workshop on Flight Safety.	Bangalore	Aeronautical Society of India.
2—3 Feb. 1981	Productivity Improvement in Garment Industry.	Delhi	National Productivity Council.
2—5 Feb. 1981	Workshop of Users of Health, Population & Family Welfare Information in India.	New Delhi	National Documentation Centre, National Institute of Health & Family Welfare.
2—6 Feb. 1981	Workshop for Mine Planning and Quarrying Practices in Cement Plants.	Andhra Pradesh	Cement Research Institute of India.
2—13 Feb. 1981	Information Systems for Materials Management.	Bombay	National Institute for Training in Industrial Engineering.
2—13 Feb. 1981	Irrigation Planning & Management.	Bombay	Civil Engineering Department, IIT Bombay
2—16 Feb. 1981	Electron Microscopy in Material Science.	Bangalore	QIP
2—16 Feb. 1981	Flow Measurement—Measurement of Water in Irrigation & Industry.	Bangalore	QIP
2—22 Feb. 1981	Laboratory Training Course on Recombinant DNA Techniques.	Varanasi	Banaras Hindu University.
2 Feb-3Apr 1981	Regional Instrumentation Centre Training Programme.	Bangalore	University Grants Commission.
3—7 Feb. 1981	Data Needs and Resource Inventory for Agricultural Planning.	Calcutta	National Productivity Council.
3—13 Feb. 1981	Management Information Systems—Seminar	Delhi	Indian Institute of Pub. Administration.
3 Feb-3 Mar. 1981	XXVIII Course on Hospital Administration	New Delhi	National Instt. of Health & Family Welfare.
6—7 Feb. 1981	Crop Insurance.	Vallabh Vidyanagar	Indian Society of Agricultural Economics and Sardar Patel University.
6—8 Feb. 1981	Ocean Futures : The next 26 years—Search for Alternative Technologies & Management Perspectives	Goa	National Institute of Oceanography, Goa : and Department of Sc. & Tech. (Futurology Panel)
6—9 Feb. 1981	61st All India Annual Convention of the Institution of Engineers (India).	Hyderabad	Institution of Engineers (India) Andhra Pradesh State Centre.
9—13 Feb. 1981	International Workshop on Ion Implementation Laser Treatment and Ion Beam Analysis of Materials	Bombay	Bhabha Atomic Research Centre.
9—13 Feb. 1981	Personnel Management and Labour Legislation for small scale industries.	Bangalore	National Productivity Council.
9—14 Feb. 1981	MBO for Engineers.	Bombay	National Institute for Training in Industrial Engineering.
9—20 Feb. 1981	Organization & Techniques of Training.	Bombay	National Institute for Training in Industrial Engineering.
10—12 Feb. 1980	Decision Network	New Delhi	National Productivity Council.
10—28 Feb. 1981	International Maritime Conference & Expo 1981	Madras	Madras Port Trust.
11—13 Feb. 1981	Energy Conservation.	New Delhi	National Productivity Council.
12—13 Feb. 1981	National Symposium on Applications of Nuclear & Allied Techniques in Public Health & Pollution Control.	Bombay	Isotopes in Industry Committee, Department of Atomic Energy.
16—18 Feb. 1981	International Symposium on Modern developments in steel making	Jamshedpur	Indian Instt. of Metals, Steel Authority of India Ltd; and Nat. Metallurgical Laboratory and TISCO.
16—18 Feb. 1981	Unconventional Machining	Bangalore	National Productivity Council.
16—19 Feb. 1981	International Symposium on Trace Analysis & Technological Development.	Bombay	Dept. of Atomic Energy, CSIR, Deptt. of Defence Research & Development, INSA, UGC, the Deptt of Space.
16—21 Feb. 1981	Computer-Based Cost Control Systems.	Bombay	National Instt. for Trg in Ind. Engg.
16—21 Feb. 1981	Materials Planning	Delhi	Indian Instt. of Public Administration.
16—21 Feb. 1981	New dimensions in the management of human resources.	Delhi	Indian Instt. of Public Administrtaion.
16—25 Feb. 1981	Seminar on Operations of Reservoirs & Maintenance & Safety of Dams.	Vadodara	Gujarat Eng. Research Institute.

Date	Title	Venue	Sponsoring Body
16—27 Feb. 1981	Cost Reduction	Bombay	National Institute for Training in Industrial Engineering.
16—27 Feb. 1981	Personnel Administration & Industrial Relations	Bombay	National Institute for Training in Industrial Engineering.
16—27 Feb. 1981	PERT/CPM	Bombay	National Institute for Training in Industrial Engineering.
17—21 Feb. 1981	Decision Making	Ahmedabad	National Productivity Council.
17 Feb-3 Mar. 1981	Electrical Insulation System Design.	Bangalore	QIP
17 Feb-3 Mar. 1981	Sound Transmission in Coastal Seas.	Bangalore	Electronics Commission.
18—20 Feb. 1981	Energy Conservation in Chemical Industries.	Bombay	National Productivity Council.
18—20 Feb. 1981	Management by Objectives.	Madras	National Productivity Council.
18—21 Feb. 1981	Workshop on Human Population; genetics.	New Delhi	Deptt. of Population Genetics & Human Development, National Institute for Health & Family Walfare.
18—28 Feb. 1981	Workshop for Senior Managers on Tea Estate Management.	Jorhat	National Productivity Council.
19—21 Feb. 1981	XVII Dairy Industry Conference.	Ahmedabad.	Indian Dairy Association.
21—22 Feb. 1981	Week-end Course 'Non-Destructive Testing on Concrete'.	Bombay	Civil Engg. Deptt. IIT Bombay.
22—24 Feb. 1981	Indo-Polish Symposium on Applications of Geological and Geophysical Techniques to Mining.	Dhanbad	University Grants Commission.
23—27 Feb. 1981	Design & Construction of Concrete Structures in Cement Plants.	Bombay	Cement Research Institute of India.
23Feb.-13 Mar. 1981	Workshop on Techniques of Mutation Breeding.	Bombay (BARC) & N. Delhi (IARI)	Food & Agricultural Committee Board of Research in Nuclear Sciences, Deptt of Atomic Energy.
23—25 Feb. 1981	Symposium on Strengthening Mechanism in solids.	Surathkal, Karnataka Energy.	Board of Research in Nuclear Sciences, Department of Atomic Energy
23—27 Feb. 1981	Corporate Planning	Agra	National Productivity Planning.
23 Feb-6 Mar. 1981	Systematic Plant Maintenance	Bombay	National Institute for Training in Industrial Engineering.
27—28 Feb. 1981	Informatics 1981	Bombay	NCS DCT, Tata Institute of Fundamental Research.
28 Feb-2 Mar. 1981	Workshop in Delivery of Primary Health Care Through Community Participation and on Community-Based Distribution Strategies.	Varanasi	Banaras Hindu University.
February 1981	DRTC Annual Seminar (18)	Bangalore	Documentation Research & Training Centre.
February 1981	11th IRMRA International Rubber conference.	Bombay	Indian Rubber Manufacturers Research Association.
February 1981	International Conference on Energy Conservation	Delhi	Association of Indian Engineering Industry and the UN Industrial Dev. Organisation.
February 1981	Rural-based Processing of Agricultural Meterials.	Ludhiana	College of Agricultural Engg. Punjab Agricultural University.
Feb/Mar. 1981	Seminar on Spinal Diseases.	Varanasi	Banaras Hindu University.
Feb/Mar. 1981	Vitamin A and its Metabolism.	Hyderabad	National Institute of Nutrition.
1— 4 Mar. 1981	2nd World Congress on diabetes—the tropics and developing countries.	Bombay	Diabetic Association of India.
2— 7 March 1981	Computer-Based Corporate Planning Systems.	Bombay	National Institute for Training in Industrial Engineering.
2— 7 March 1981	Workshop on Shock Absorbers.	Pune	Central Institute of Road Transport.
2—20 March 1981	Materials Management.	Bombay	National Institute for Training in Industrial Engineering.
4—6 March.1981	National Symposium on Earthquake Disaster Mitigation.	Roorkee	Department of Earthquake Engg. Univ. of Roorkee.
4—18 March 1981	River Mechanics.	Bangalore	QIP
4 Mar-2 Apr. 1981	Regional Instrumentation Centre Training Programme	Bangalore	University Grants Commission.
5—6 March 1981	National Symposium on Maintenance Management of Power Stations & Chemical Process Industries	Bombay	Department of Atomic Energy.
5—12 March. 1981	XI course on Materials Management in Hospitals.	New Delhi	National Institute of Health & F. Welfare.
9—13 March 1981	Fuels & Firing Systems in Cement Plants.	Hyderabad	Cement Research Institute of India.
9—14 March 1981	Budgetary Control.	Bombay	National Institute for Training in Industrial Management.
11—12 March 1981	Air Pollution Control	Delhi	National Productivity Council
14—15 March 1981	Seminar on Electronics & Telecommunication Engineering Education.	New Delhi	Institution of Engineers (India) New Delhi.

Date	Title	Venue	Sponsoring Body
16—27 March 1981	Managerial Effectiveness.	Bombay	National Institute for Training in Industrial Management.
17—19 March 1981	Plant Physiology: An Under-utilised potential for Increasing Crop Productivity.	Bangalore	Department of Atomic Energy.
18—20 March 1981	Effective Management of training.	Jaipur	National Productivity Council.
20 March-2 Apr. '81	Course on Rural Technology.	Bangalore	QIP
23—25 March 1981	Workshop on 'Methodological Aspects of Demographic Analysis of Sterilization'.	Bombay	International Institute for Population Studies and the Internanational Univ. for the Scientific Study of Population, Belgium.
23—27 March 1981	Testing & Evaluation of In-situ concrete and concrete structures.	Ballabgarh	Cement Research Institute of India.
23 Mar-3 Apr. 1981	Production Planning & Control.	Bombay	National Instt. for Training in Industrial Engineering.
24—28 March 1981	Management Training.	Bangalore	National Productivity Council.
30 Mar-4 Apr. 1981	Personnel for Non-Personnel Executives.	Bombay	National Institute for Training in Industrial Engineering.
30 Mar-4 Apr. 1981	Productivity Linked Wage Incentives.	Bombay	National Institute for Training in Industrial Management.
30 Mar-10 Apr. 1981	Valve Engineering.	Bombay	—Do—
March 1981	Chemical Processing & Machinery in Textile Industry.	Baroda	Textile & Allied Industries Research Organisation; MS Univ. of Baroda, Assoc. of Chemical Technologists (India) and Institution of Engineers.
March 1981	Communicational Language Teaching Project Review Seminar.	Bangalore	Regional Institute of English.
March 1981	Seminar on Membrane Technology.	New Delhi	Institution of Engineers (India), New Delhi.
Mar/Apr. 1981	Second National Conference on Electroplating & Metal Finishing.	Bombay	Society for Advancement of Electrochemical Science & technology.

Subject Index

Date	Title	Venue	Sponsoring Body
Aeronautics			
Jan/Feb. 1981	Seminar cum workshop on flight safety.	Bangalore	Aeronautical Society of India.
Agriculture			
January 1981	Energy in Agriculture	Ludhiana	College of Agricultural Engg; Panjab Agricultural University.
January 1981	Watershed Management.	Ludhiana	-Do-
February 1981	Rural-based Processing of Agricultural Materials.	Ludhiana	-Do-
3—7 Feb. 1981	Data needs and resource inventory for agricultural Planning	Calcutta	National Productivity Council.
6—7 Feb. 1981	Crop Insurance.	Vallabh Vidyanagar	Indian Society of Agricultural Economics and Sardar Patel University.
19—21 Feb. 1981	XVII Dairy Industry Conference.	Ahmedabad	Indian Dairy Association.
23 Feb-13 March	Workshop on Techniques of Mutation Breeding.	Bombay (BARC) N. Delhi (IARI)	Food & Agriculture Committee Board of Research in Nuclear Sciences; Deptt of Atomic Energy.
17—19 March 1981	Plant Physiology: An Under-utilised Potential for Increasing Crop Productivity.	Bangalore	Department of Atomic Energy.
20 March-3 Apr. 81	Course on Rural Technology.	Bangalore	QIP
Atomic & Nuclear Physics			
1—14 Jan 1981	Winter School in Theoretical High Energy Physics.	Kalpakkam	Tata Institute of Fundamental Research
Civil Engineering			
24—25 Jan. 1981	Weekend course 'Optimal Design of Water Supply and Wastewater Removal Systems'.	Bombay	Civil Engineering Department. IIT Bombay.
2—13 Feb. 1981	Irrigation Planning & Management	Bombay	Civil Engineering, Deptt. IIT Bombay
2—16 Feb. 1981	Flow Measurement-Measurement of water in Irrigation and Industry.	Bangalore	QIP
21—22 Feb. 1981	Week-end course 'Non-Destructive Testing on Concrete".	Bombay	Civil Engineering, Deptt. IIT Bombay
4—18 March 1981	River Mechanics	Bangalore	QIP
Communication			
17 Feb-3 March 81	Sound Transmission in Coastal Seas	Bangalore	Electronics Commission

Date	Title	Venue	Sponsoring Body
Computers			
16—21 Feb. 1981	Computer-based Cost Control Systems.	Bombay	National Instt. of Trg. in Ind. Engg.
Design			
10—14 Jan. 1981	International Council of Societies of Industrial Design Executive Board Meeting.	Ahmedabad	National Institute of Design.
15—17 Jan. 1981	1st National Seminar on Design Education	Bombay	National Institute of Design.
19 Jan. 1981	1st National Seminar of Professional Designers on Design and Materials.	Bombay	National Institute of Design.
Energy			
16—17 Jan. 1981	Energy Substitution	Patna	National Productivity Council.
February 1981	International Conference on Energy Conservation.	Delhi	Association of Indian Engineering Industry and the UN Industrial Dev. Org.
11—13 Feb. 1981	Energy Conservation	New Delhi	National Productivity Council.
18—20 Feb. 1981	Energy Conservation in Chemical Industries.	Bombay	National Productivity Council.
Engineering			
5—10 Jan. 1981	Workshop on Air, Fuel & Oil Filters.	Pune	Central Institute of Road Transport.
5—10 Jan. 1981	Physical-Chemical & Mineralogical Control in Cement Manufacturing Processes.	Ballabgarh	Cement Research Institute of India.
6— 8 Jan 1981	Sugar Plant Maintenance.	Bangalore	National Productivity Council.
7— 8 Jan. 1981	Super Finishing Process	Bombay	National Productivity Council.
19—20 Jan. 1981	Hydraulic Systems.	Bombay	Aero. Engg. Deptt. IIT Bombay.
21—22 Jan. 1981	Machine Tool Reconditioning	Calcutta	National Productivity Council.
6— 9 Feb. 1981	61st All India Annual Convention of the Insititution of Engineers (India).	Hyderabad	Institution of Engineers (India) Andhra Pradesh State Centre.
23—27 Feb. 1981	Design & Construction of Concrete Structures in Cement Plants.	Bombay	Cement Research Institute of India.
23 Feb-6 March 1981	Systematic Plant Maintenance.	Bombay	National Instt. or Trg. in Ind. Engg.
March 1981	Seminar on Membrane Technology.	New Delhi	Institution of Engineers (India).
2— 7 March 1981	Workshop on Shock Absorbers.	Pune	Central Institute of Road Transport.
9—13 March 1981	Fuels & Firing Systems in Cement Plants.	Hyderabad	Cement Research Institute of India
14—15 March 1981	Seminar on Electronics & Telecommunication Engineering Education.	New Delhi	Institution of Engineers (India) New Delhi.
23—27 March 1981	Testing & Evaluation of In-site Concrete and Concrete Structures.	Ballabgarh	Cement Research Intustite of India.
30 Mar-10 Apr. 1981	Valve Engineering	Bombay	National Instt. of Trg. in Ind. Engg.
Financial Management			
10—30 Jan. 1981	Information Systems for Financial Management.	Bombay	-Do-
16—27 Feb. 1981	Cost Reduction	Bombay	-Do-
9—14 March 1981	Budgetary Control	Bombay	-Do-
Genetics			
2—22 Feb. 1981	Laboratory Training Course on Recombinant DNA Techniques.	Varanasi	Banaras Hindu University.
18—21 Feb. 1981	Workshop on Human Population, Genetics.	New Delhi	Department of Population Genetics & Human Development, National Instt. for Health & Family Welfare.
Geology & Geophysics			
15—16 Jan. 1981	Seminar on Coal Theme.	Delhi	National Productivity Council.
22—24 Feb. 1981	Indo-Polish Symposium on Applications of Geological & Geophysical Techniques to Mining.	Dhanbad	University Grants Commission.
4— 6 March 1981	National Symposium on Earthquake Disaster Mitigation	Roorkee	Department of Earthquake Engineering, University of Roorkee.
Industry & Labour			
5— 6 Jan. 1981	Productivity Agreements and Trade Unions.	Bombay	National Productivity Council.
9—13 Feb. 1981	Personnel Management and Labour Legislation for Small scale Industries.	Bangalore	National Productivity Council.
30 Mar-4 Apr. 1981	Productivity-Linked Wage Incentives.	Bombay	National Instt. for Trg. in Ind. Management.
Instrumentation			
13—26 Jan. 1981	Industrial Instrumentation.	Bangalore	BHEL
2 Feb-3 Apr. 1981	Regional Instrumentation Centre Training Programme.	Bangalore	University Grants Commission.
4 March-2 Apr. 81	Regional Instrumentation Centre Training Programme.	Bangalore	University Grants Commission.
Language & Literature			
March 1981	Communicational Language Teaching Project Review Seminar.	Bangalore	Regional Institute of English.
Library Science			
9—12 Jan. 1981	XXVII All India Library Conference.	Hyderabad	Academy of Library Science & Documentation.
February 1981	DRTC Annual Seminar (18)	Bangalore	Documentation Research & Trg. Centre.

Date	Title	Venue	Sponsoring Body
Management			
2— 3 Jan. 1981	Apex Seminar on Technology Management for Power Systems.	New Delhi	Institution of Engineers (India) New Delhi.
6— 8 Jan. 1981	Effective Management of Training.	Goa	National Productivity Council.
12—23 Jan. 1981	Operations Research in Practice.	Bombay	National Instt. for Trg. in Ind. Engg.
19 Jan-6 Feb. 1981	Organisation & Methods.	Bombay	-Do-
20—24 Jan. 1981	Office Administration.	Ahmedabad	National Productivity Council.
27 Jan-6 Feb. 1981	Managerial Skills for Technical Personnel.	Bombay	National Instt. for Trg. in Ind. Engg.
3—13 Feb. 1981	Management Information Systems—Seminar.	Delhi	Indian Instt. of Public Administration.
9—14 Feb. 1981	MBO for Engineers.	Bombay	National Instt. for Trg. in Ind. Engg.
9—20 Feb. 1981	Organization & Techniques of Training.	Bombay	-Do-
10—12 Feb. 1981	Decision Network.	New Delhi	National Productivity Council.
16—27 Feb. 1981	PERT/CPM	Bombay	National Instt. for Trg. in Ind. Engg.
18—28 Feb. 1981	Workshop for Senior Managers on Tea Estate Managements.	Jorhat	National Productivity Council.
17—21 Feb. 1981	Decision Making	Ahmedabad	National Productivity Council.
18—20 Feb. 1981	Management by Objectives.	Madras	National Productivity Council.
23—27 Feb. 1981	Corporate Planning.	Agra	National Productivity Council.
2— 7 March 1981	Computer-Based Corporate Planning Systems	Bombay	National Institute of Training in Industrial Engineering.
16—27 March 1981	Managerial Effectiveness.	Bombay	National Institute of Training in Industrial Management.
18—20 March 1981	Effective Management of Training.	Jaipur	National Productivity Council.
24—28 March 1981	Management Training.	Bangalore	National Productivity Council.
Materials Management			
2—13 Feb. 1981	Information Systems for Materials Management	Bombay	National Institute for Trg. in Ind. Engg.
16—21 Feb. 1981	Materials Planning.	Delhi	Indian Institute of Public Administration.
2—20 March 1981	Materials Management.	Bombay	National Instt. for Trg. in Ind. Engg.
Medicine & Public Health			
5—17 Jan. 1981	5th Management Course for CGHS Officers.	New Delhi	Dept. of Med. Care & Hospital Admn. National Instt. of Health & Family Welfare.
5—25 Jan. 1981	Training Course on Neurobiology.	Panjim	Tata Institute of Fundamental Research.
21—23 Jan. 1981	Orientation Training Seminar under MPW Scheme for State level Officers.	New Delhi	Department of Community Health Admn. National Instt. of Health & Family Welfare.
2— 5 Feb. 1981	Workshop for Users of Health, Population and Family Welfare Information in India.	New Delhi	National Documentation Centre, National Institute of Health & Family Welfare.
Feb/March 1981	Seminar on Spinal Diseases.	Varanasi	Banaras Hindu University.
Feb/March 1981	Vitamin A and its Metabolism.	Hyderabad	National Institute of Nutrition.
3 Feb-3 March 1981	XXVIII course on hospital administration.	New Delhi	National Instt. of Health & Family Welfare.
12—13 Feb. 1981	National Symposium on Applications of Nuclear & Allied Techniques in Public Health & Pollution Control.	Bombay	Isotopes in Industry Committee, Deptt of Atomic Energy.
28 Feb-2 Mar. 1981	Workshop in Delivery of Primary Health Care through Community Participation and on Community-based distribution strategies.	Varanasi	Banaras Hindu University.
1— 4 March 1981	2nd World Congress on diabetes in the tropics and developing countries.	Bombay	Diabetic Association of India.
5—12 March 1981	XI course on Materials Management in Hospitals.	New Delhi	National Institute of Health & Family Planning.
23—25 March 1981	Workshop in 'Methodological Aspects of Demographic Analysis of Sterilization'.	Bombay	International Institute for Population Studies and the International Union for the Scientific Study of Population, Belgium.
Mining & Metallurgy			
24—25 Jan. 1981	Symposium on Training of Personnel for the Mineral Industry.	Calcutta	Mining, Geological & Metallurgical Institute of India.
2— 6 Feb. 1981	Workshop in Mine Planning and Quarrying Practices in Cement Plants.	A.P.	Cement Research Institute of India.
16—18 Feb. 1981	International Symposium on Modern Developments in Steel making.	Jamshedpur	Indian Instt. of Metals Steel Authority of India Ltd. & National Metallurgical Laboratory and TISSCO.
Water Resources			
6— 8 Feb. 1981	Ocean Futures : The next 25 years—Search for Alternative Technologies & Management Perspectives.	Goa	National Institute of Oceanography, Goa and Deptt. of Science & Technology (Futurology Panel).

Date	Title	Venue	Sponsoring Cody
10—28 Feb 1981	International Maritime Conference & Expo 1981.	Madras	Madras Port Trust.
16—25 Feb. 1981	Seminar on Operations of Reservoirs & Maintenance & Safety of Dams.	Vadodara	Gujarat Engg. Research Institute.
Personnel Management			
16—21 Feb. 1981	New Dimensions in the Management of Human Resources.	Delhi	Indian Institute of Public Admn.
16—27 Feb. 1981	Personnel Administration & Industrial Relations.	Bombay	National Instt. for Trg. in Ind. Engineering.
30 March-4 Apr. 81	Personnel for Non-Personnel Executives.	Bombay	National Institute for Trg. in Industrial Engineering.
Pollution Control			
11—12 March 1981	Air Pollution Control.	Delhi	National Productivity Council.
Production Management			
5— 6 Jan. 1981	Standardisation & Quality Control for Agricultural Implements.	Ludhiana	National Productivity Council.
19 Jan-24 Jan.1981	Spare Parts Management.	Bombay	National Institute for Training in Industrial Engineering.
16—18 Feb. 1981	Unconventional Machining.	Bangalore	National Productivity Council.
23 March-3 Apr. 1981	Production Planning & Control.	Bombay	National Instt. of Trg. in Ind. Engg.
Research and Information			
27—28 Feb. 1981	Informatics 1981	Bombay	NCS, DCT, Tata Institute of Fundamental Research.
Science & Technology			
January 1981	68th Session of the Indian Science Congress.	Varanasi	Banaras Hindu University.
1—3 Jan. 1981	Symposium on Quantum Electronics.	Pune	Department of Atomic Energy.
3—7 Jan. 1981	Indian Science Congress 1981	Calcutta	Indian Science Congress Association.
4—8 Jan. 1981	Second LAIH PSP Symposium.	Bombay	Chemical Engg. Deptt. IIT Bombay.
19—23 Jan. 1981	2nd Special Symposium on Natural radiation environment.	Bombay	Department of Atomic Energy, Bhabha Atomic Research Centre.
20—21 Jan. 1981	FRP and Rubber Lining.	Ahmedabad	National Productivity Council.
28 Jan-1 Feb. 1981	6th Indo-Soviet Symposium on the Chemistry of Natural Products.	Pune	National Chemical Laboratory.
February 1981	11th IRMRA International Rubber conference.	Bombay	Indian Rubber Manufacturers Research Association.
2—16 Feb. 1981	Electron Microscopy in Material Science.	Bangalore	QIP
9—13 Feb. 1981	International Workshop on Ion Implementation Laser Treatment and Ion Beam Analysis of Materials.	Bombay	Bhabha Atomic Research Centre.
16—19 Feb. 1981	International Symposium in Trace Analysis & Technological Development.	Bombay	Deptt. of Atomic Engg. CSIR, Deptt. of Defence Research & Development, INSA, UGC and the Deptt. of Space.
17 Feb-3 March 1981	Electrical Insulation System Design.	Bangalore	QIP
23—25 Feb. 1981	Symposium on Strengthening Mechanisms in Solids.	Surathkal Karnataka	Board of Research in Nuclear Sciences, Department of Atomic Energy.
5—6 March 1981	National Symposium on Maintenance Management of Power Stations and Chemical Process Industries.	Bombay	Department of Atomic Energy.
March/April 1981	Second National Conference on Electroplating & Metal Finishing.	Bombay	Society for Advancement of Electrochemical Science & Technology.
Social Welfare			
27—31 Jan. 1981	Training Workshop on Innovations in Juvenile Justice Systems in the Asian Region.	New Delhi	International Council on Social Welfare, Regional Council for Asia and Western Pacific, National Instt of Social Defence (Dept. of Social Welfare) and Indian Institute of Public Administration.
Textile Technology			
2—3 Feb. 1981	Productivity Improvement in Garment Industry.	Delhi	National Productivity Council.
March 1981	Chemical Processing & Machinery in Textile, Industry.	Baroda	Textile & Allied Industries Research Organisation, MS Univ. of Baroda, Association of Chemical Technologists (India) and Institution of Engineers.
Transport and Communication			
10—12 Jan. 1981	International Symposium on Digital Communication	Bombay	Electrical Eng. Deptt, IIT Bombay.
19—24 Jan. 1981	Workshop on Bus Accident Control.	Pune	Central Institute of Road Transport.

Further details can be had from : The Librarian, British Council Library, AIFACS Building, Rafi Marg, New Delhi-110001

UNIVERSITY OF KERALA

TRIVANDRUM

No. Ad. DII. 2.401/80

Notification

Applications are invited from qualiied candidates for appointment as Reader in Economics in the University Department of Economics, Kariavattom, Trivandrum in the scale of Rs. 1125-1725.

Appointments will be made in accordance with Section 6, Sub section ii of Chapter II of Kerala University Act 1974.

Qualifications

1. A first or second class Masters degree in Economics with not less than 50% marks of an Indian University or equivalent qualification of a foreign University.
2. Either a research degree of a doctorate standard or published work of a high standard.
3. About five years experience of teaching at a University or college and some experience of guiding research.

Age

Not more than 45 years.

Application forms and other details can be had from the Deputy Registrar (Administration) University of Kerala, Trivandrum on production of a receipt for Rs. 2/- (Rs. Two only) remitted in any branch of the State Bank of Travancore or crossed Postal Order drawn in favour of the Finance Officer, University of Kerala, Trivandrum specifying the post for which application forms are required.

The last date fixed for receipt of application is **30-12-1980.**

C.K. Devassy
REGISTRAR

SAURASHTRA UNIVERSITY

RAJKOT

Applications in the prescribed forms are invited for the posts of (1) Professor of Law (one post)—specialization preferably in Mercantile Law. Candidates with other specialization may apply. Pay scale : Rs. 1500-60-1800-100-2000-125/2-2500 and (2) Co-ordinator (one post) for National Adult Education Programme, Pay scale :Rs. 1100-50-1600.

Application forms for these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360005, on sending a self-addressed envelope of the size 23x11 cms. with postage stamps worth Rs. 1.60 for the post No. 1 and Re. 0.60 for the post No. 2.

Qualifications for these posts are as under :

PROFESSOR OF LAW

An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

CO-ORDINATOR (N.A.E.P.)

A post-graduate degree in Education preferably in Adult Education or in Social Sciences or Social Work or Rural Studies or Agriculture and (b) Twelve years teaching experience in a college or an institution of higher education preferably with field work experience or ten years administrative experience in a responsible position in University or comparable educational and/or training institution or field experience in Social Welfare or Rural Work.

Applications (Seven copies for Post No. 1 and One copy for Post No. 2) accompanied by Indian Postal Order for Rs. 10/- crossed in favour of the Registrar, Saurashtra University, Rajkot, should reach this office on or before **12-1-1981.**

The Post No. 1 is permanent and the appointment shall be given on probation initially for one year which may be extended for a period not exceeding one year.

The Post No. 2 is temporary but likely to continue till the scheme continues.

The initial appointment for the Post No. 1 shall be with the minimum of the pay scale but in suitable cases higher initial pay may be considered. The allowances like D.A., A.D.A., H.R.A., etc. and Provident Fund and retirement benefits will be admissible as per the University Rules from time to time.

Age ordinarily not exceeding 55 years for the Post No. 1 and 45 years for the Post No. 2. The age, educational qualifications and the experience may be relaxed in suitable cases. The employment shall be subject to the conditions of service rules for the University employees as may be amended from time to time.

The candidates already in employment must submit their applications through their present employers. Those knowing Gujarati and/or Hindi will be preferred. The candidates will have to travel at their own cost if called for interview.

V. M. Desai
REGISTRAR

MARATHWADA UNIVERSITY

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Advertisement No. Estt/Dept/61

Applications are invited for the posts of Lecturers, one each in Russian, Chinese, Library Science, Commerce and Economics, in the pay scale of Rs. 700-40-1100-50-1600.

The posts of Lecturers in Russian, Chinese and Library Science are reserved for the candidates belonging to Scheduled Castes and Scheduled Tribes. However, if no candidate from reserved categories as above is found suitable, the posts will be filled up by open competition.

Eight copies of applications together with eight copies each of the testimonials, if any, separately for each post giving particulars in the prescribed form (which will be supplied on receipt of an Indian Postal Order of Rs. 3/- towards the cost of the form) should be sent to the Registrar so as to reach him not later than **December 31, 1980** The prescribed application forms will be supplied to the candidates on request accompanied by a self addressed envelope (23 x 10 cms) bearing postal stamps worth Rs. 2/- for the postage separately for each post.

S. B. Patil
REGISTRAR

UNIVERSITY OF KASHMIR

SRINAGAR

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Applications on the prescribed application form to reach the undersigned by **31st December, 1980** are invited for the following posts carrying the pay scales indicated against them :

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The prescribed application forms can be had from the University Office on cash payment of Rs 6/- or by sending a crossed Postal Order drawn in favour of the Registrar of this University, cashable at Srinagar Post Office, alongwith a self addressed envelope (5″x11″) with the necessary postage.

Candidates are advised in their own interest to send their detailed curriculum vitae in advance.

Datails in respect of the qualifications prescribed for the posts can be obtained from this office.

Peerzada Ghulam Hassan
Deputy Registrar (Admn.)

HIMACHAL PRADESH UNIVERSITY

Advertisement No : 10/80

Applications on a plain paper (duly typed in the proforma given below) under registered cover, alongwith a crossed Indian Postal Order of Rs 10/- (Rs 5/-SC/ST) payable to the Finance Officer, H.P. University, are invited for the post of PROFESSOR in PHYSICS so as to reach the undersigned on or before **6th January, 1981.**

Essential Qualifications

(a) A first or high second class Master's degree of an Indian University or an equivalent qualification of a foreign University in the subject or in allied subject with bright academic record;

(b) either a research degree of

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THESES OF THE MONTH

A list of Doctoral Theses Accepted by Indian Universities

PHYSICAL SCIENCES

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1. Baboo, Achyutananda. Composition operatiors. Sambalpur University.

Physics

1. Agrawal, Rakesh Chandra. Electrical property of some ionic solids. Ravishankar University.
2. Bahal, Rattan. On the marginal states of some systems in hydrodynamics and hydromagnetics. Himachal Pradesh University.
3. Das, Anita. Photo dielectric response and conduction mechanism in copper phthelocyanine. University of Saugar.
4. Pal, Deepti. Mechanical, and surface structural studies on biological specimens. University of Jabalpur.
5. Pandey, Rajendra Kumar. Studies on thin solid films. Ravishankar University.
6. Pandey, Sheo Kumar. Study of penetrative instabilities Ravishankar University.
7. Saha, Madhusudan. Studies on the magnetic properties of some crystals of transition and rare earth group. University of Calcutta.
8. Sahu, Kailas Chandra. Ultrasonic studies in liquids and polymer solutions. Andhra University.
9. Shandil, Ram Gopal. Some hydrodynamic instability problems of non-homogeneous fluids. Himachal Pradesh University.

Chemistry

1. Ashok Kumar. Synthesis and pharmacological evaluation of some rigid and semirigid catecholamines. Kumaun University.
2. Babra, Sudhakar Anantrao. Preparation and characterisation of lanthanide complexes. Nagpur University.
3. Baidya, Om Bahadur. Transition metal formates and their compounds with bases. Panjab University.
4. Bandyopadhyay, Asok Kumar. Spectroscopic investigation of some rare earth complexes in crystals. University of Calcutta.
5. Fadnavis, Nitin Wasantrao. Physico-chemical studies on the properties of Y-ketoesters. Nagpur University.
6. Garg, Gita. Chemical investigation of some Indian medicinal plants. University of Rajasthan.
7. Mandal, Anchalkanti. Studies on biologically active substances from Indian medicinal plants. University of Calcutta.
8. Mishra, Nimai Charan. Studies on transition metal complexes. Sambalpur University.
9. Mohanty, Sangram Kishore. Structure and stability of metal complexes : Copper (II) and nickel (II). Sambalpur University.
10. Negi, Ranjana. Chemical evolution of some biomolecules. Kumaun University.
11. Patel, Mahendrakumar Jashbhai. Studies on composition and component glycerides of milkfat of buffaloes under different dietary conditions. Sardar Patel University.
12. Prajapati, Ishvarbhai Govindbhai. Studies on carbohydrate contents of buffalo-milk under different dietary conditions. Sardar Patel University.
13. Saluja, Inder Kaur. Chemistry of medicinal plant products. University of Saugar.
14. Sharma, Shashi Kumar. Electrochemical studies of some anions in aqueous organic solvent mixtures at dropping mercury electrode. University of Rajasthan.
15. Singh, May Eliner. Studies in carbanion reactions. Nagpur University.
16. Singh, Ram Pal. Characterisation of acidic soils of Garhwal Hills and effect of lime on the availability of phosphate. Kumaun University.
17. Thakore, Prashant Vinaykant. Studies in synthesis of quinoline derivatives. M.S. University of Baroda.

Earth Sciences

1. Madan Lal. Stratigraphy and tectonics of the area between Kargil and Both Kharbu, Ladakh District, part of the Indus suture belt. University of Jammu.
2. Pattnaik, Srikanta. Bias factor in loose grain size analysis. Sambalpur University.
3. Sapru, Ashok Kumar. Petrological and structural studies of the rock units around Leh, Kashmir Himalaya. University of Jammu.

BIOLOGICAL SCIENCES

Anthropology

1. Kaul, Vinod. Age changes in dental arches : A study of growth of dental arches in the Jats of Haryana. Panjab University.

Biochemistry

1. Chattopadhyay, Bulbul. Studies on phosphoglyceride hydrolysing enzymes in 1) Saccharomyces cerevisiae and 2) Neurospora crassa conidia. University of Calcutta.

Botany

1. Bhadouria, Sindhu Raj Singh. Combining ability character correlations and genetic component studies in wheat, T. aestivum L. University of Jabalpur.
2. Jain, Kranti Kumar. Inheritance studies of quantitative characters in sunflower, Helianthus annuus L. University of Rajasthan.
3. Kuksal, R.P. Inheritance and linkage studies in dwarf Frenchbeen, Phaseolus valgaries L. in relation to its morphological and economical characters. Kumaun University.
4. Panigrahi, Ashok Kumar. Ecophysiological effects of mercurial compounds on some fresh water fishes. Berhampur University.
5. Seyed Ehtesham Hasnain. Exogenous DNA mediated genetic manipulation of algal protoplasts: Studies on interaction of polycations with DNA, DNase and plasma membrane. Jawaharlal Nehru University.
6. Singara Charya, M.A. Studies in seed-borne fungi of some common pulses. Kakatiya University.
7. Singhal, Pradeep Kumar. Primary Productivity of some inland freshwaters with special reference to macrophytes of Sagar Lake. University of Saugar.
8. Srinath Rao. Effect of X-rays, gamma rays and metasystos on physiological and morphological variabilities in Abelmoschus esculentus (L.) Moench and Cyamopsis tetragonoloba (L.) Taub. Kakatiya University.

Zoology

1. Bisht, R.S. Studies on ecology and biology of certain aquatic insects of Kumaun Lakes. Kumaun University.
2. Govardhan Reddy, A.V. Studies on the effects of scorpion H. fulvipes venom on some physiological parameters of Calotes nemoricola. Sri Venkateswara University.
3. Mohabey, Meena. Parasitic effects on some aspects of haematology and biochemistry of Clarias batrachus (Linn) found in nature heavily infected with caryophyll acid cestodes. Ravishankar University.
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